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Cotton Yield for Year Down From Output of 1956

Below All-time High
But Much Above Ten
Year Average Figure

WASHINGTON — The 1957 cotton crop yield is estimated at 413 lb. an acre, 4 lb. below the all-time high of 1955 but 113 lb. above the 10-year average, according to the Crop Reporting Board's Nov. 1 forecast.

The board estimated the crop at 11,788,000 bales, which would be 11.4% less than last year's crop of 13,310,000 bales and below the 1946-55 average of 13,669,000 bales.

Cool, rainy weather beginning in September and continuing through October over most of the Cotton Belt further delayed harvesting and maturity of the already late crop, the board said. Unfavorable weather held maturity of bolls at a virtual "stand-still" in many areas during the last three weeks of October. Boll rot and field losses of open cotton were heavy. In Texas, Oklahoma and northern areas of the Central Belt, the slow maturing crop was overtaken by earlier than average frosts. While a careful appraisal of apparent and prospective damage has been made, the extent of losses in many areas will depend on subsequent weather conditions.

F. J. Welch Appointed to TVA Board of Directors

WASHINGTON — With the recent appointment of Dr. Frank J. Welch to the board of the Tennessee Valley Authority, the three-man TVA board is now at full strength for the first time in several months. Dr. Welch, dean of the College of Agriculture, University of Kentucky, was appointed by President Eisenhower to fill out the term of the late Raymond R. Paty who died earlier this year.

Other members of the TVA board are Herbert D. Vogel, chairman, and Arnold R. Jones. Mr. Jones was placed on the board on an interim basis last

(Continued on page 21)

Chemicals, Weather Cut New Mexico Hopper Problem

ALBUQUERQUE, N.M.—Chemical control programs and changed weather conditions have drastically reduced grasshopper infestations in New Mexico, according to a survey completed recently by the Plant Pest Control Division of the USDA Agricultural Research Service office in Albuquerque. But authorities are still urging further control programs in the state's trouble areas.

The survey shows that about half a million acres of rangeland are infested at this time, a remarkable improvement over the 2,500,000 acres of rangeland infested a year ago. Infestations in 1955 and 1954 were also much greater than at present.

John J. Durkin, extension entomologist at New Mexico A&M College, says control programs annihilated millions of grasshoppers on more than 120,000 acres of rangeland this year. Over 60,000 acres were sprayed from the air in the Nara Visa area of Union and Quay counties.

Another area of over 30,000 acres was treated in the Sudan area of Union County and poison was spread

(Continued on page 21)

California Fertilizer Assn. Follows Partnership Theme

SAN FRANCISCO—Some 500 persons took part in the 34th annual convention of the California Fertilizer Assn., held at the St. Francis Hotel, San Francisco, on Nov. 3, 4 and 5. William G. Hewitt of Berkeley was elected president, to serve during 1958. He succeeds Jack Baker of Los Angeles.

Other 1958 officers elected were Howard H. Hawkins, Glendora, vice president; M. M. Stockman, San Francisco, treasurer and Fred R. Bryant, Shafter, secretary. Sidney H. Bierly of San Marino was reelected general manager.

Elected to the board of directors for three year terms were Fred R. Bryant, Shafter; Frank Easton, Fres-

Technical Aspect of Fertilizer Trade Is Round Table Subject

By DONALD NETH
Croplife Managing Editor

WASHINGTON—Some 275 persons gathered at the Sheraton-Park Hotel here Nov. 6-8 to swap information about the technical aspects of fertilizer manufacturing at the 6th annual Fertilizer Industry Round Table.

Dr. Vincent Sauchelli, National Plant Food Institute, Round Table chairman, in opening the proceedings, commented upon the growing willingness of the technical people to exchange information. He said that the skeleton of the sessions would be answers prepared in advance to 88 questions and that comment from the floor would be welcome. In this manner, during five half-day sessions, a vast amount of material was presented on subjects such as raw materials, ammoniation, granulation and equipment.

During a pause for a business session, members of the Round Table

elected Dr. Sauchelli as chairman; J. E. Reymonds, Jr., Davison Chemical Co., division of W. R. Grace & Co., Baltimore, and Albert Spillman, Fertilizer Manufacturing Cooperative, Baltimore, both vice presidents; and H. L. Marshall, Olin Mathieson Chemical Corp., Baltimore, secretary-treasurer.

Dr. Sauchelli said that the dates of Oct. 29-31 were open for next year at the Sheraton-Park Hotel and a motion was approved to reserve them for the 1958 Round Table.

A suggested theme for the 1958 sessions is "maintenance and equipment," Dr. Sauchelli said. He asked for suggestions from the floor for subject matter for future meetings, and these topics were mentioned:

Economics of fertilizer manufacturing, how to cut costs of production.
Study of air pollution.

Advantages of granulation from the farmers' point of view.

Other suggestions were to set aside an hour or two for written questions from the floor and to break up into smaller special-interest groups.

One of the lively topics at a session on ammoniation was the factors which influence the ammoniation characteristics of superphosphate.

Dr. G. L. Bridger, Davison Chemical Co., division of W. R. Grace & Co., Baltimore, said that the physical properties of super were generally more important than the chemical properties. The important properties, he said, were particle size, moisture content and porosity. Particle size should be as small as possible and moisture content should be at least 6%, he said.

As to ammoniation rate, Dr. Bridger said that when too much was used, a considerable amount was not absorbed. He said rates should be 4 lb. per unit for triple super and 6 lb. per unit for normal super. Reaction time with these rates should be about three minutes. Temperature of reaction is not as important as some of the other factors, Dr. Bridger said.

After ammonia is absorbed in the mixing step there can be nitrogen loss in the dryer, Dr. Bridger said. Here the factors are temperature, time and ammoniation, with temperature being the most important. Nitrogen loss increases gradually as drying time increases, he said. Nitrogen loss does not occur in the storage step except under unusual conditions, according to Dr. Bridger.

E. C. Perrine, Nitrogen Division, Allied Chemical & Dye Corp., New York, in commenting on the same problems, said that factors in am-

"Incomes per farm are increasing, up from \$2,337 in 1956 to about \$2,450 for 1957 . . . Farms and ranches were never more productive. A new high may be set this year in total production—even though the soil bank took about 25 million acres out of production. Farms were never so well equipped with good machines, tractors and trucks—practically all have electric power and lights.

"The great abundance of food products flowing from our farms and ranches is making possible the highest level of living and most healthy diets ever enjoyed by our people. Sur-

(Continued on page 20)

(Continued on page 20)

Inside You'll Find	
INORGANIC CHEMICAL OUTPUT INCREASES: U.S. report says anhydrous ammonia, ammonium nitrate production up in August . . .	Page 3
MISSISSIPPI CONFERENCE: Mixers, dealers and salesmen combine efforts to help farmers get better production . . .	Page 4
FERTILIZER OUTPUT IN ISRAEL INCREASES: Report indicates significant progress in production of plant food products . . .	Page 6
INDUSTRY A PARTNER WITH FARMER: Dr. R. L. Luckhardt develops theme that partnership with farmer is industry's role . . .	Page 18
World Report . . .	6
Patents and Trademarks . . .	7
Over the Counter . . .	9
What's New . . .	10
Oscar and Pat . . .	12
What's Been Happening . . .	14
Editorials . . .	22
Meeting Memos . . .	23



James E. Nall

Virginia-Carolina Names James Nall Manager of Fertilizer Division

RICHMOND, VA.—James E. Nall, former director of staff departments of Standard Fruit and Steamship Co., New Orleans, La., has been elected vice president and general manager of the fertilizer division of Virginia-Carolina Chemical Corp.

Mr. Nall Joined Standard Fruit in 1955 after six years with the Ford Motor Co. in Detroit, Mich., where he was plant controller in the Ford division production department, administrative manager in the Ford division controller's office, and supervisor in operations analysis, central staff.

After receiving his M.B.A. degree from the University of Chicago, in 1944, Mr. Nall joined the management consultant firm of Booz, Allen and Hamilton. He was associated with this firm as a staff engineer in Chicago and New York until 1949.

In his new position with V-C, Mr. Nall will be responsible for the sales, marketing, advertising, production, and engineering activities of the company's multi-million dollar fertilizer operations.

Olin Mathieson Sales Up For Third Quarter

NEW YORK—Sales and operating revenues of Olin Mathieson Chemical Corp. in the United States and Canada during the quarter ended Sept. 30, 1957 totaled \$158,875,993, a gain of about 2% over sales of \$155,876,813 in the corresponding 1956 period, the firm has announced.

Net operating profit for the third quarter amounted to \$9,079,445, and was equal to 67¢ a share on the average number of common shares outstanding during the period. This compares with net operating profit of 74¢ a share in the 1956 quarter. Addition of non-recurring net profit of 34¢ a share last year brought third quarter per share earnings, on a smaller number of shares outstanding, to a total of \$1.08 a share, or a total net profit of \$14,299,715, the report says.

CAUSE OF LODGING

MANHATTAN, KANSAS—Two fungus diseases are the cause of some of the milo lodging that has occurred this year, tests in the botany and plant pathology department at Kansas State College in Manhattan have shown. Fusarium stalk rot or charcoal rot is usually the trouble when the plants go over near the ground and have heads with small kernels. If the stalks go over above the top joint the trouble is weak-neck. This year, fusarium stalk rot is appearing in western Kansas and charcoal rot in eastern Kansas, according to Claude L. King, extension plant pathologist at Kansas State.

California Fertilizer Assn. Awards Cash Prizes to Students

SAN MARINO, CAL.—Four annual one hundred dollar cash scholarships have been awarded by the soil improvement committee of the California Fertilizer Assn., to students in the crop production and soil science departments of California State Polytechnic College, CFA has announced.

The two scholarships made available to the San Luis Obispo campus were awarded to Laurence L. March, Santa Cruz; and to Wayne B. Sheldon, Sebastopol, Cal. Mr. March is a crop production student, and Mr. Sheldon is in the soil science department.

The awards for Kellogg-Voorhis (Pomona) campus students were presented by officers of the Association at a campus awards assembly on Oct. 25. The students chosen for the honor were Donald J. Reid, Norwalk, and Richard Lee Walton, Santa Ana. Making the presentations were Howard H. Hawkins, Glendora, a director and treasurer of the association, and general manager Sidney H. Bierly of San Marino.

The four recipients of these annual scholarships are chosen by faculty Scholarship Committees, on the basis of diligence in their studies, as measured by grade point averages, and for high standards of morality, citizenship, and leadership.

The four awards are made each year, as a stimulus to student interest in the pursuit of scientific agriculture as a worth-while career. It was pointed out that there are adequate material and psychological rewards in the field of agriculture and its allied industries for properly trained persons, in active farm operation, agricultural research, agricultural instruction, and in the numerous technical positions with industries which serve agriculture. The fertilizer, pesticide, seed, and farm equipment industries were named in the latter connection.

Oklahoma Dealers Plan Statewide Conference

STILLWATER, OKLA.—Oklahoma fertilizer dealers will hold their third annual conference on Nov. 25 at Oklahoma State University under auspices of the Oklahoma Plant Food Educational Society.

Speakers will discuss methods of increasing sales, farmers' experience with fertilizer in increasing yields, credit, public and private research in use of fertilizer, the agricultural outlook, and other topics. The speaker who will discuss the agricultural outlook is Raymond J. Doll, agricultural economist with the Federal Reserve Bank, Kansas City, Mo.

The conference will precede by one day the annual Oklahoma Soils and Crops Conference, and it is expected that a majority of the fertilizer men will stay over for the second event.

Mississippi Conference Scheduled for January

STATE COLLEGE, MISS.—The fourth annual Mississippi Insect Control Conference will be held at Mississippi State College, Jan. 9-10, according to A. G. Bennett, entomologist of the agricultural extension service, and Ed Broadus of Jackson, president, Mississippi Entomological Assn.

The latest research information on field crop and livestock insects will be presented at this meeting, he said.

Particular emphasis will be placed on hazards involved in use of insecticides, including highest allowable insecticidal residues. Also receiving special attention will be the uses of systemics and phosphate insecticides.

Attending the annual meeting will be research entomologists, agricultural workers, professional entomologists, pest control operators, and aerial applicators.

Nopco Observes 50th Year of Business

HARRISON, N.J.—Nopco Chemical Co. is observing its 50th anniversary this year. Having started business in 1907 with an investment of \$1,000, the firm can look back over a half century of steady progress which has brought it to its current gross of \$28 million.

The company's founders, Charles P. Gulick and Arthur Philips, began business with sulfonated oils and through research and vigorous marketing, greatly expanded the firm's activities. Today it embraces hundreds of industries, with five plants and offices and warehouses located throughout the United States and Canada.

Among its products are emulsifiers for use in the formulation of liquid insecticides including toxaphene and chlordane. Other fields in which Nopco is prominent are vitamin fortification of livestock and poultry feeds and other feed supplements.

In the vitamin field, Nopco was the first company to manufacture vitamin concentrates for addition to dairy products. Medical authorities have credited vitamin-fortified milk with the virtual eradication of rickets as a childhood menace. Other Nopco products are used in the textile, tanning, and pulp and paper industries although the company is involved in these industries long before the fibers, leather, or timber arrive at the processing mills.

The firm is listed on the New York Stock Exchange where it has been since 1940, and the company has just paid its 109th consecutive dividend.

Kansas Experiments With Soluble Phosphate

MANHATTAN, KANSAS—Recent fertilizer investigations in the Kansas agricultural experiment station have shown no definite relationship between the degree of water solubility of phosphorus in the fertilizers, and the yield of oats produced.

Floyd Smith, soils professor at Kansas State College, reports a trial at the Ashland agronomy farm near Manhattan where a fertilizer in which only about a fourth of the phosphorus was water soluble produced a greater increase in yield than one in which three-fourths of the phosphorus was water soluble.

Bringing Test Results Closer to Actual Production Is Theme of Cotton Conference

MEMPHIS, TENN.—Progress and problems in bringing test tube results and the cotton grower closer together will be described by the kick-off speaker at the Beltwide Cotton Production Conference at the Peabody Hotel here Dec. 12-13.

The speaker will be Dr. H. Brooks James, director of resident instruction at North Carolina State College, Raleigh. His address will be on the "Human Side of Cotton Production." Past and present developments in cotton production technology will be examined by Dr. James in the light of different abilities of growers to put developments into successful operation.

A factual background covering differences in age, tenure status, financial position, size of farm, acreage allotments, and the like will be given, and the implications of these characteristics pointed out in regard to problems and progress in the adoption of improvements in production techniques. Dr. James also will point up the types of assistance and programs that are needed if potential benefits from technology are to be realized.

UPPING NITROGEN USE

ATHENS, GA.—Two extension specialists at the University of Georgia, P. J. Bergeaux and Ralph L. Wehun, present in a recent letter to members of the Georgia plant food educational society, that at the present time the state is using approximately 42,000 tons of actual nitrogen each year. "We should be using about 223,000 tons annually," they added. "Our extension agronomy goal is to increase nitrogen consumption to 175,000 tons by 1965."

Industry Gifts to California School Listed

BERKELEY, CAL.—Almost \$22,000 was allocated for research in the field of agricultural chemicals on the campuses of the University of California during September as the result of some nine cash donations principally by chemical manufacturing firms.

The largest of these was a gift of \$6,500, the first of three annual donations, made by the National Science Foundation for research on the correlation of larvae and adults of polytrichous trombidiform mites.

A grant of \$3,300 was made by the Olin Mathieson Chemical Corp. for soil fungicide screening program in plant pathology. California Spray Chemical Corp. gave \$2,500 during the month to establish a project on soil fertility and moisture utilization relationships.

The American Potash Institute, Inc. gave \$2,000 for research on leaf analysis, including such laboratory and field work as may be necessary in establishing the value of the leaf analysis procedure as a diagnostic aid in studying the potassium nutrition of fruit trees.

The sum of \$2,000 was given also by the California Avocado Society for expanding research on the avocado root-rot program.

Two other gifts by California Spray Chemical Corp. will support additional research studies: \$1,500 to support a study on sources of nitrogen fertilizers for vegetables; and \$1,000 to support a program of fungicide screening and testing in respect to both laboratory and field work.

Shell Chemical Corp. gave \$500 to assist with source of phosphorus experiments on vegetable crops in southern California; and \$445.36 was given by the California Cooperative Rice Research Foundation for research in agronomy. Over-all total of all nine gifts amounted to \$21,745.36.

Following Dr. James on the program will be M. Earl Heard, vice president in charge of research of the West Point Manufacturing Co., Shawmut, Ala. He served as chairman of the recent cotton task group of the presidential commission on increased industrial use of agricultural products.

At the conference Mr. Heard will summarize and then give the status and implications of the findings and recommendations of the cotton task group, with emphasis on cotton production.

Research and education needs and opportunities in cotton production will be outlined by Dr. R. D. Lewis, director of the Texas Experiment Station, College Station. It also is expected that he will show the role of research and education in making cotton more competitive, maintaining grower income, and reducing the surplus.

The production conference is being sponsored by the National Cotton Council in cooperation with cotton belt land-grant colleges, U.S. Department of Agriculture, the agricultural chemical industry, farm organizations and other groups.

Inorganic Chemical Output Increases, U.S. Report Says

WASHINGTON—Production of inorganic chemicals for August, 1957, was higher in most instances than that of the same month the previous year, according to figures just released by the U.S. Department of Commerce, Bureau of the Census. Among the inorganic chemicals listed in the report were the following:

Anhydrous ammonia production for August, 1957, was 294,507 tons as compared to 242,584 tons for August last year. In July, 1957, production totaled 293,661 tons, which is a revised figure.

Fertilizer grade ammonium nitrate was produced in the amount of 190,413 tons in August this year, and 139,635 tons last August. July's production this year was 161,363 tons.

Synthetic technical ammonium sulfate was produced in August, 1957 at the rate of 84,575 tons as compared to 81,576 tons a year ago. July of this year saw some 80,717 tons produced.

Byproduct ammonium sulfate was produced at the rate of 78,245 tons in August, 1957, and 63,072 tons in that month last year. July's output was 79,587, the report says.

Phosphoric acid from phosphate rock was produced in the amount of 205,860 tons in August, 1957, as compared to 132,412 tons the same month of 1956. In July, 1957, the output was 205,240 tons.

Total sulfuric acid output was counted at 1,301,256 tons in August this year, as compared to 1,181,809 tons that month last year. Production in July of this year was 1,285,869 tons.

August's production of calcium arsenite was down considerably, the report states. Production in August, 1957, was 313 tons, as compared to 1,171 tons that month last year. Production in July, 1957, was 1,890 tons.

Van Waters & Rogers Specialists Meet

PORLAND, ORE.—A meeting was held here Nov. 7-9 for directors and chemical specialists of Van Waters & Rogers, from all branches and divisions of the company. The group consisted of 24 industrial chemists headquartered in cities from Vancouver, B.C. to Dallas, Texas.

They constituted the company's permanent new products development department, which examines, evaluates and introduces new chemicals and chemical processes to western industry.

Tom Moore, manager of the Portland branch of Van Waters & Rogers, was host to the group, along with Gordon Gabie, manager of the local industrial chemists, James G. Hohn, Charles E. McMurdo and Manson P. Millikin.

Geo. Van Waters, president, and Nat S. Rogers, executive vice president, talked before a dinner meeting. A luncheon was held with the chemical products division of the Crown Zellerbach Co. at Camas, Wash.

Horticulture Short Course Teaches Pest Control

CLEMSON, S.C.—A 4-day horticulture short course held here Nov. 5-8 for county extension workers emphasized new methods in producing and handling vegetables and truck crops, proper care of ornamentals, and orchard management.

The new methods in producing and handling vegetables and truck crops explained correct soil management, correct use of irrigation, use of beds for higher yields, and best fertilizing

and liming practices. Information on vegetable insects and diseases illustrated how to identify the various pests and the best means of controlling them.

The sessions for ornamentals explained the type of materials used for landscape planning, preparation and care of lawns, identification and control of diseases and insects attacking ornamentals, and a tour of the ornamental plants on the Clemson campus.

In the orchard management sessions, fundamentals of pruning, fruit diseases and insects, and fruit production were featured.

DWIGHT F. BARNES DIES

FRESNO, CAL.—Dwight F. Barnes, U.S. Department of Agriculture entomologist, died here recently at the age of 67. He pioneered in airplane dusting in the early 1920's and was credited with being the first man to dust a forest with chemicals from a plane.

Fall Application of Fertilizer Effective

BERKELEY, CAL.—Ranchers who did not fertilize their ranges in September still have time to add nitrogen to boost production for the coming winter months.

Tests at the University of California's field station in Hopland show that September applications of ammonium or urea nitrogen about triple the winter forage production over unfertilized areas. But applications in November will still give twice the forage yield of unfertilized areas, said Milton B. Jones, agronomist at the range research station in Mendocino county, who set up the tests.

Fertilizer applications in January, February and March produce about the same amount of spring growth as fertilizer applied in the fall.

Mr. Jones is continuing the study to see how the different dates of nitrogen applications affect forage production during the second year. Early fall applications of fertilizer

produce the best winter growth, he found. Fertilizers greatly increased spring growth but the date of application was relatively unimportant for forage production during this period.

Pesticide School

RALEIGH, N.C.—Problems in the fields of plant pathology, weed control and entomology will receive attention at the 10th annual North Carolina Pesticide School, to be held at North Carolina State College here Jan. 21-22. Twenty two college staff members and four U.S. Department of Agriculture specialists will appear on the program.

PENNSALT NAMES TREASURER

PHILADELPHIA—The board of directors of Pennsalt Chemicals Corp. has appointed W. Cooper Willits treasurer. Mr. Willits has been assistant to the president since joining Pennsalt in November, 1956. He was formerly associated with Kidder, Peabody & Company, investment bankers.



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INSECT AND PLANT DISEASE NOTES

Colorado Finds Serious Grasshopper Threat

FORT COLLINS, COLO.—Grasshoppers pose a serious threat to crops and rangeland in eastern Colorado.

Dr. L. B. Daniels, chief entomologist for the Colorado Agricultural Experiment Station, said the annual fall survey of the Colorado Insect Detection Committee showed large infestations in the northeastern, eastern and central portions of the state. No serious buildup has been reported on the Western Slope, he added.

So far, farmers have applied insecticides to more than 250,000 areas in an effort to avert major crop damage next spring. Even now, many fall-planted wheat fields have suffered serious marginal injury.

Counties hardest hit include Logan, Sedgwick, Phillips, Yuma, Washington, Cheyenne, Kiowa and Kit Carson. In attempts to keep grasshopper damage at a minimum, Cheyenne County alone has treated more than 100,000 acres, using both sprays and baits.

Dr. Daniels said the entire inventory of carry-over bait materials, namely bran, sawdust and sodium fluorosilicate, has been exhausted in the eastern counties. As a result, farmers are using a variety of other materials, including rolled wheat, oats, barley and sorghum, as well as sudan grass screenings and cracked corn.

These materials are oil treated with one of the chlorinated hydrocarbons and applied at rates ranging from five to ten pounds an acre. Between excellent and fair results have been obtained, Dr. Daniels said.

New Cotton Disease in Texas Threatens Crop

LUBBOCK, TEXAS—A new blight of unknown origin is attacking thousands of acres of cotton in west Texas. The disease or fungus started a few weeks ago and is now spread widely over the area.

The blight is causing cotton leaves to die, and attacked plants have much the same appearance as they did last spring when young plants died after a siege of heavy rains.

The same thing has happened now, according to Dr. Harry C. Lane, plant physiologist with the Lubbock Experiment Station. He believes this is a new disease that has never before been observed in this area.

The condition was first diagnosed as Ascochyta blight, Dr. Lane said, but research workers in Oklahoma have been unable to find the typical fruiting structure that is common in Ascochyta blight.

If the disease over-winters in this area, it will be a threat to the improvement of cotton quality, Dr. Lane

said. The quality of the cotton will be definitely damaged if the leaves die in September and October.

Ohio Borer Count Down But Loss Remains High

COLUMBUS, OHIO—Corn borer population in Ohio is down a little from a year ago, but borers still are a problem and cost Ohio farmers nearly \$1½ million this year.

D. Lyle Goleman, Ohio State University extension entomologist, makes these observations following a corn borer survey of 300 Ohio fields this fall. The survey was conducted by the agricultural extension service in cooperation with the agricultural experiment station.

The survey, Mr. Goleman says, showed an average of 35.1 borers for each 100 plants, about one third borer per plant, compared to 53.3 borers for each 100 plants, or one half borer per plant, in 1956.

Figuring this year's crop loss from corn borers at 1,294,558 bu. (based on 2% loss per borer per stalk) and price at \$1.13 bu., borers destroyed \$1,462,850 worth of corn for Ohio farmers this year, he calculates. This compares to a loss last year of more than \$2½ million.

Borers were more prevalent in Northwest Ohio than elsewhere in the state, according to the survey. In that area they numbered 45.4 for each 100 plants, compared to 63.1 for each 100 plants last year.

Corn Borer Counts in Iowa Reported High

AMES, IOWA—Surveys in the state show a state average of 397 borers per 100 plants—a total that has been exceeded in only two previous years. These were 1949 when 802 borers were found to each 100 plants; and 1954 when 483 borers were found per 100 plants.

Incomplete reports from 37 of Iowa's 99 counties indicate that there were 683,700 acres of commercial field corn and 69,700 acres of hybrid seed corn treated for first brood borers in 1957. About 51,324 acres of commercial field corn and 15,000 acres of hybrid seed corn were treated for second brood borer in Iowa.

Winter Control of Pests Declared Economical

CHICAGO—Controlling insects, while generally regarded as a summer problem, is a year-round job, the National Sprayer & Duster Assn. says. There is no time when an alert poultryman or livestock producer can lay away his sprayer and duster. In winter months the flying insects are not a problem, but lice and mites in poultry houses and on birds will cut egg production. Lice, fleas and ticks,

(Continued on page 21)

Audubon Society Proposes Federal Tax On Pesticides to Finance Future Studies

NEW YORK—The National Audubon Society at its annual meeting Nov. 11 proposed a 5% federal tax on manufacturers of insecticides to finance a long-range study to determine the effects of insecticides.

Richard H. Pough, former chairman of the department of conservation, American Museum of Natural History, advocated the federal tax and said that from the point of view of public relations, the tax on pesticides could be a factor in getting manufacturers "off the hook" in the public concern about pesticide hazards. Mr. Pough estimated

that the tax would raise about \$15,000,000 annually.

Dr. Paul Sears, head of Yale University's conservation program, advocated a long-range research program. The society's members were told that the toxic effects of DDT might last from five to seven years and that at least 500 newer and more lethal pesticides were being developed but that information about them was lacking.

Mr. Pough, in advocating the federal tax to finance the long-range study, cited the 10% tax on firearms and fishing tackle, the proceeds from which are earmarked for use by the federal Fish and Wildlife Service.

AT MISSISSIPPI CONFERENCE

Mixers, Dealers and Salesmen Sharpen Tools to Help Farmers Get Maximum Crop Production

By W. R. THOMPSON
Leader, Extension Agronomy
Mississippi State College

BILOXI, MISS. (Special to CROPLIFE)—The annual Mississippi Fertilizer Convention, under the leadership of Si Corley, Mississippi commissioner of agriculture, and an advisory committee of the fertilizer industry, was held at the Edgewater Gulf Hotel, Biloxi, Miss., Nov. 6-8 with 100 manufacturers, dealers and salesmen attending. This is one occasion where the manufacturers, dealers and salesmen get together and discuss between themselves and the agricultural workers who attend, the best procedures to get the most from the fertilizer sold in the area and outline methods to encourage and help farmers get better production of all crops.

At this meeting the fertilizer industry voted to sponsor for 1958 the 5-acre corn contest to encourage increased production and more efficient use of good seed, good land and recommended fertilizer on the corn planted in Mississippi. In 1957 there were 1,600,000 acres of corn planted in Mississippi with an estimated average of 28 bu. per acre produced. Through better land selection and use of better fertilizer rates the yields of corn in Mississippi can be raised to 40 bu. and on many farms 50 to 60 bu.

All the fertilizer industry and agricultural workers know and agree that more fertilizer will have to be used to produce the needed corn in Mississippi. Cattle numbers have increased over 30% during the last few years. This means more feed must be grown. It is profitable to trade fertilizer for higher production of corn per acre.

Every year at the fertilizer convention there are renewed acquaintanceships and renewed interest and emphasis in helping the farmer with his fertilizer problems. Si Corley is always encouraging the fertilizer industry to use its resources and influence to carry better recommendations to the farmers.

In my estimation, the fertilizer salesmen and dealers have come to be servicemen in their fields. They study the recommendations made by the agricultural workers and pass this on to the farmers. Many times farmers will not use the recommended rate of fertilizer if they are not encouraged by their fertilizer salesmen and dealers.

For the corn contest under the direction of K. L. Anderson, assistant extension agronomist, Mississippi State College, the state of Mississippi will be divided into three areas, North Mississippi, South Mississippi and the Delta, because the soil types in these areas are not similar.

Paul T. Truitt, executive vice president of the National Plant Food Institute, told about the expansion program that is being initiated by the Institute. Mr. Truitt stated that farm programs are being studied more closely by Congress and national organizations along with local organizations than ever before. Programs developed by the national groups, Mr. Truitt said, will be very important to farmers in the future.

There are two phases of agriculture, he stated, that will be very influential on farming in the state and these are cost of labor and cost of products. In some areas these two factors are causing fewer farmers and larger farm units. He stated that the fertilizer industry as a whole wants to cut cost of production and give more for the money expended

for fertilizer. Mr. Truitt also stated that manufacturers are doing everything possible to cut cost of production and are going so far as to watch and install every safety measure in their own plants and to cut down such costs as insurance and other costs that will affect the price of fertilizer to the farmer.

The Institute is interested in supporting increased research and study in agriculture to give the farmers better and more information on crop production.

Dr. W. L. Giles, superintendent, Delta Branch Experiment Station, Stoneville, Miss., gave some facts about experiment station crop production.

Dr. Giles said that experiment stations find new facts and serve as unbiased testing grounds for methods and materials. The stations' findings help increase yields, improve quality of products and increase production efficiency and profits. He said that cash receipts from crops and livestock have increased 226 million dollars in 10 years, a yearly average increase of over 22 million dollars per year. Cotton brings in over 61% of the income to Mississippi farmers. Lint cotton has increased during the last 50 years (from 1907 to 1957), 23 times, going from 204 lb. to 486 lb. of lint per acre. In 1956 Mississippi produced 147,000 more bales of cotton than in 1907 on only 46% of the acreage that was planted in 1907.

One of the most phenomenal things brought out by Dr. Giles was this fact: If all the nitrogen sold in the Delta area in 1933 had been used on cotton, the acre rate would have been 0.91 lb. He also stated that we knew all the nitrogen was not used under cotton so the figure would be even less than this. In 1955 by actual survey of units of nitrogen used under cotton, the average was 95 lb. per acre and in 1956 it had increased to over 100 lb. per acre.

Dr. Giles said that there is a control for bloat with penicillin which will increase higher rates of fertilizer because farmers are not as afraid of clover bloat as they once were.

Deep tillage on all crops has meant a lot to crop production. In the year of 1954, 1,665 lb. of cotton increase was produced per acre because of deep tillage, Dr. Giles said.

The findings of sulfur needs on cotton and clover were outstanding during the past few years. Plant breeding improvements have increased on all crops. Dr. Giles stated that 95% of the soybeans grown in the Delta today are being grown from new varieties released in the last five years.

The experiment stations are not without their problems though, Dr. Giles stated. There is still a problem of financing the tremendous increase in research needs and to get and replace research people who have to be hired. More research is needed each year as time goes on. Dr. Giles said it would not make any difference how industrialized Mississippi gets, every acre should still produce a profit from the crop it is adapted to.

Frank Boyd, southern agronomist, Virginia-Carolina Chemical Corp., Montgomery, Ala., talked about fertilizing crops using soil testing as a source of information as to the amount of fertilizer to use. According to his talk, most fertilizer mixtures in the South are either higher in phosphate and lower in potash or vice versa or a balance of the two plant foods. He says these three mixtures

(Continued on page 21)

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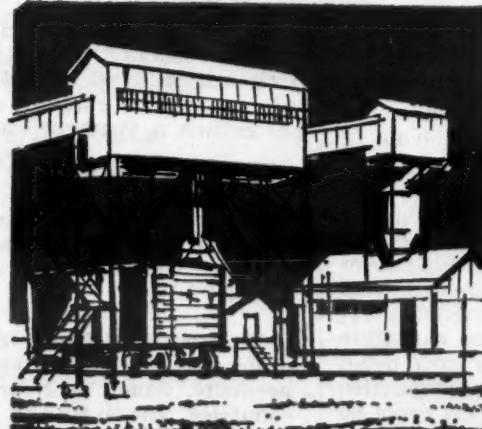
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WORLD REPORT

By GEORGE E. SWARBRECK
CropLife Canadian and Overseas Editor

Israeli Development

Despite the political troubles in the Middle East and the warlike threats of Soviet Russia, industrial progress in Israel goes on unabated. Not the least progressive are the phosphate and potash installations.

During August of this year the production of phosphates hit a new high at 17,500 tons, an increase of 40% when compared with the former monthly average production of 12,500 tons.

The plant of the Dead Sea works is expected to reach capacity production of potash in the fall of 1958, when the construction of the carnallite reservoir, now under way, is completed. This reservoir will supply the machines non-stop 24 hours a day.

A new supply of carnallite, said to be five times more concentrated than that now being worked in the Dead Sea, has been discovered on Mount Sdom. Right now it is not certain that these deposits can be worked commercially, but a survey is being pressed forward.

In the period January-July this year, 60,000 tons of potash were produced by the Dead Sea plant, and of this total 53,000 tons went into export channels bringing a cash take of \$2.4 million. This year the Israelis expect that potash will earn them \$4 million at least. More than half the export availability is lifted by the U.K., the other buyers being Australia, Ceylon, Japan and some Latin American countries.

Asian Exports

Israel is expecting the demand from Asian countries to boom. The country is in a better situation, geographically, than the other main potash exporting countries — France, Germany, Spain, USSR—and it is this advantage which the Israelis are playing up. The demand from Asian countries will be more efficiently met when the port of Eilat is fully developed. That will be when bulk-loading facilities are available and communications improved. Currently, most potash shipments go out of Haifa.

The Israelis are not stopping at the Mount Sdom project. Proposals for the construction of other plants are now receiving consideration. Another plan is to lay a pipeline from Sdom to Eilat or to the Mediterranean, through which the carnallite fluid will be pumped. This could mean a major price reduction; expensive road and rail transportation could be eliminated.

Japanese Prospects

Though the Japanese government has issued an optimistic report concerning the prospects for the fertilizer trade, both domestic and export, in the new fertilizer year, traders are expressing doubts. Their fears stem from an impression that the authorities are over-estimating the ability of the domestic market to absorb the greater production now coming from the plants.

The government estimate shows a production potential of 3,790,000 tons of ammonium sulfate in the period August, 1957, to July, 1958, an increase of 512,000 tons over the previous year. It is estimated that the domestic requirement will rise by 240,000 tons to 2,630,000 tons and that exports will jump 290,000 tons to 1,220,000 tons.

If the fears of the traders are realized, then the export market will

have to take more and there lies another problem for the Japanese. The foreign market may not be as lush as that of recent years. The decline in ocean freights in the past few months has allowed western countries to compete more effectively with Japanese fertilizer in Asiatic markets. Prices were cut, but the consensus is that there will have to be further cuts if the market is to be retained in its entirety.

The manufacturers say they dare go only so far in reducing prices; the chances for western manufacturers in the Far East appear to be brighter in consequence.

Brazil Desires Domestic Production

The Brazilians are looking hopefully at the prospects of manufacturing their own fertilizers. Under recently-introduced tariff regulations phosphates have to pay a duty of 30% ad valorem, and some superphosphates 40%. Muriate of potash and nitrogenous fertilizers can enter the country duty free. One result is the eagerness of local businessmen to get into the fertilizer manufacturing business.

One firm, Irmaos Iochpe S.A., Porto Alegre, says it wishes to start manufacture on a fairly large scale of ammonium sulfate, triple superphosphate, and muriate of potash in granulated form. Iochpe is not in a position to finance the business itself, because of the high cost of the necessary machinery, so participation of foreign firms would be welcomed, officials state.

Formosan Fertilizer

The output of fertilizers, chiefly ammonium sulfate, in Formosa is expected to reach more than 530,000 metric tons next year, according to the government-owned Taiwan Fertilizer Co.

Despite the growing extent of domestic production on the island, imports will still be needed. Expenditure on imports runs an average of \$20 million a year.

Wheat Infestation

Infestation of wheat is a matter of growing concern to producers in the northern and southern regions of Africa.

Morocco has been facing the problem of wheat stink bugs, a pest normally found in Near Eastern countries. The extent of the infestation has assumed plague proportions and all control methods have proved inadequate. The natives collect the insects by hand but this has not been successful; chemical control methods have not worked. Research into the problem is being intensified.

A heavy infestation of wheat lice was the problem faced by growers in the Orange Free State and in the Transvaal, but it was speedily conquered. Arrangements were made to fly insecticide from Germany and the affected areas were sprayed from aircraft. The operation is reported as being completely successful and an expected drop in wheat production was forestalled.

Briefs . . .

Southeastern Saskatchewan can expect a severe outbreak of grasshoppers in 1958, according to a forecast by Dr. Paul Reigert, an entomologist of Saskatoon. He bases his

prediction on the egg pod surveys conducted during the late summer and early fall months.

• • •

A fertilizer factory at Lyallpur, Pakistan, set up by the Pakistan Industrial Development Corp., has started production. Another factory at Daudkhel started-up in October.

• • •

The first plant in Australia to produce sulfuric acid from oil refinery gasses is to be built at Geelong, Victoria. The plant is expected to produce 100 tons of sulfuric acid a day by burning hydrogen sulfide gas.

Chemical Employees in California Dip Slightly

SAN FRANCISCO — Employment in chemical manufacturing industries in California took a fairly sharp seasonal dip between August and September, but the number of wage and salary workers in the industry remained fractionally higher than the number employed the previous September.

There were an estimated 38,800 at work making both agricultural and industrial chemicals in the state during the last month of the third quarter, as compared with 39,500 in August and 38,300 in September, 1956, according to estimates of the division of labor statistics and research.

New Mexico Farmers Warned Against Weed

ALBUQUERQUE — New Mexico ranchers and farmers are being warned about a possible invasion of the noxious weed Halogeton. Poisonous to sheep, and in a lesser degree to cattle, it has been spreading over rangeland in the western states.

Some Halogeton seeds were found recently in samples of crested wheatgrass seed examined by Miss Elizabeth McSwain, seed analyst with the New Mexico Department of Agriculture at State College. Infestations of Halogeton have been reported in Nevada, Utah, Idaho, Wyoming, California and Colorado; but New Mexico has escaped infestation thus far. Farmers are asked to ship a sample of any grass seed from these states to the New Mexico seed laboratory.



J. A. Kerr

NEW APPOINTMENT—J. A. Kerr, assistant sales manager of the Bemis Bag Co.'s multiwall paper bag plant in Mobile, Ala., has been named sales service manager. He replaces G. W. Finlay, who has joined the St. Louis general office as supervisor of multiwall sales. Announcement of the appointment was made by C. E. Hayward, manager. Mr. Kerr is a native of Tipton, Mo., where he attended school prior to joining Bemis in 1917.

Spencer Award Given

KANSAS CITY — The Charles F. Spencer award for meritorious contribution to agricultural and food chemistry was presented Nov. 8 to Dr. William Cumming Rose, a professor emeritus at the University of Illinois, biochemical researcher for the past forty-five years. The award, which includes a bronze medallion and a \$500 honorarium, is sponsored by Kenneth A. Spencer, president of Spencer Chemical Co.

WEED CONTROL TAUGHT

DES MOINES — New methods of chemical weed control were outlined before the recent convention of the Iowa Seed Dealers Assn. here. E. P. Sylvester of Iowa State College was the principal speaker.

Fertility Problems to Be Aired in Short Course Scheduled for Minnesota Dec. 9th

ST. PAUL, MINN.—Talks by soils specialists and industry representatives are on the agenda for the 7th annual soils and fertilizer short course to be held at the University of Minnesota's farm campus here Dec. 9. The sessions will occupy the morning, afternoon and evening hours, according to the advance program issued by the University.

Dr. Harold Macy, dean of the Institute of Agriculture, will welcome the group, and Dr. W. P. Martin, head of the department of soils at the University will speak on "Why Are Soil Fertility Problems So Complex?"

Other talks scheduled for the morning session, presided over by Sherwood Berg, include: "Impact of New Fertilizer Materials," George Stanford; "Starter Fertilizer Needs Where Bulk Spreading Is Popular," A. C. Caldwell; "When Does Fertilizer Cost and When Does It Pay?" L. M. Day; and "Soil Problems—Korea vs. Minnesota," P. M. Burson.

The afternoon session will be in charge of Skul Rutherford, director of extension. The program will include "Fertilizers and Soil Compaction," G. R. Blake; "A Potential Fertilizer Market, Native Pasture Fertilization," C. A. Simkins; and a discussion on "What's New?"

Subjects on the agenda, with speakers, include "Phosphate Placement on Flax," C. P. Klint; "Is Dwarf Corn Coming?" W. F. Hueg; "Fertilizing

"Peat Soils," R. S. Farnham; "Water Solubility of Phosphate," M. V. Halvorson; "Effect of Residual Nitrogen," J. M. MacGregor; and "Rate of Nitrogen Leaching," L. E. Ahlrichs.

"Nitrogen and Phosphate Interaction," A. C. Caldwell; "Aster Yellows Problem," H. G. Johnson; "Iron Deficiencies," R. G. Burau and J. R. Brownell; "New Fertilizer Attachments," C. J. Overdahl; "Subsoil Fertility Studies," J. Grava; "Soil Test Changes by Fertilizer Treatment," L. D. Hanson; "Soil and Water Research Station at Morris," C. A. Van Doren; and "Yield Potentials—a Fundamental Study," R. H. Rust.

A question-and-answer program will follow the presentation of the summaries of subjects enumerated above.

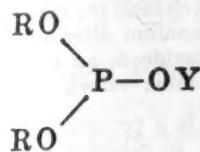
The evening program will consist of four talks following dinner at the farm campus cafeteria. The talks and speakers will be:

"What Makes Farmers Buy Fertilizer?" Raoul Allstetter, vice president, National Plant Food Institute, Washington, D.C.; "The Place of Industry in Research," by J. C. Englebous, International Minerals & Chemicals Corp.; Zenas H. Beers, executive secretary, Middle West Soil Improvement Committee, Chicago, "Production Potentials in Minnesota"; and R. E. Bergman, fertilizer control official, St. Paul, "Minnesota Fertilizer Laws."

Industry Patents and Trademarks

2,811,543

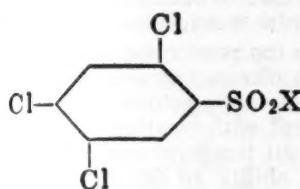
Phosphorothiolates Having Insecticidal Properties, and Method of Making Same. Patent issued Oct. 29, 1957, to Harry W. Coover, Jr., and Joseph B. Dickey, Kingsport, Tenn., assignors to Eastman Kodak Co., Rochester, N.Y. The process for preparing insecticidal compounds having the formula Cl-CSP(O)(OR), comprising reacting perchloro methyl mercaptan with a compound of the formula



where R is selected from the group consisting of lower alkyl, phenyl and toluyl and Y is selected from the group consisting of lower alkyl, phenyl, toluyl and sodium while maintaining the temperature of the reaction mixture at approximately 10° C.

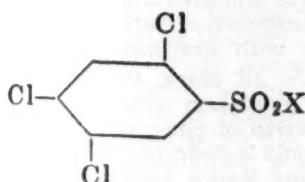
2,812,281

Polychloro-Diphenylsulfones and the Use of Such Compounds for Combating the Stages in the Development of Mites. Patent issued Nov. 5, 1957, to Jacques Meltzer and Hendrikus Obias Huisman, Weesp, Netherlands, assignors to North American Philips Co., Inc., New York. A compound corresponding to the formula:



wherein C1 is a chlorine radical and X is a radical selected from the group consisting of phenyl, 4-chlorophenyl and 2,4,5-trichlorophenyl radicals.

A method of destroying mites comprising distributing a composition comprising a compound corresponding to the formula



wherein C1 is a chlorine radical and X is a radical selected from the group consisting of phenyl, 4-chlorophenyl and 2,4,5-trichlorophenyl radicals and an inert carrier therefor to bring said composition into contact with said mites.

2,812,368

Treatment of Benzene Hexachloride. Patent issued Nov. 5, 1957, to Max H. Gruber, Zurich, and Jean A. Filiottaz, Dielsdorf, Switzerland, assignors to Dr. R. Maas A.-G., Chemische Fabrik Dielsdorf, Dielsdorf, Switzerland. A method of preparing a benzene hexachloride composition containing an enhanced gamma isomer content which comprises establishing a solution of the gamma isomer and at least one other isomer of benzene hexachloride in a lower aliphatic alcohol of 1 to 4 carbon atoms, diluting such solution at 5° C. to 40° C. with sufficient water to provide an aqueous alcoholic solution containing from 5 to 30 percent by weight of water based on the water and alcohol whereby to precipitate only a portion of the dissolved benzene hexachloride, said precipitate containing a higher gamma isomer concentration than said dissolved benzene hexachloride and separating the precipitate from the aqueous alcoholic medium within 25 minutes of the time it is formed.

2,812,369

Production of Benzene Hexachloride. Patent issued Nov. 5, 1957, to Charles Evans, Jr., Pittsburgh, Pa.,

assignor to Columbia-Southern Chemical Corp., Allegheny County, Pa. A method of preparing a benzene hexachloride composition rich in the gamma isomer which comprises providing a solution of an isomeric mixture of benzene hexachloride containing the gamma and alpha isomers in a ratio of at least 2.0 to 1.0 in a lower aliphatic alcohol of 1 to 4 carbon atoms, adding 3 to 35 percent water by volume of the alcoholic solution to said benzene hexachloride solution at 10° C. to 50° C. whereby to precipitate only a portion of the solute, separating the precipitate from the resulting aqueous alcoholic solution and cooling the separated alcoholic solution to form a second precipitate.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Swift-Sure, in stencil-type letters, for insecticide. Filed Aug. 27, 1956, by Gerson Stewart Corp., Cleveland, Ohio. First use January, 1929.

Ozark, in capital letters, for soluble fertilizers. Filed April 23, 1957, by Ozark-Mahoning Co., Tulsa, Okla. First use Jan. 22, 1957.

Ozark, in outline capital letters with solid shield-like design below, for soluble fertilizers. Filed April 23, 1957, by Ozark-Mahoning Co., Tulsa, Okla. First use Jan. 22, 1957.

South Carolina Reports Plant Food Sales Up

CLEMSON, S.C.—An increase in the consumption of most fertilizers has been noted in South Carolina's department of fertilizer inspection and analysis for the months of July-October, 1957. Only phosphatic materials registered a drop from the same period of 1956.

According to Bruce D. Cloaninger, director of the department, mixed fertilizers in the state for the four-month period were 54,761 tons for 1957 as compared to 52,456 tons for that period last year. This was an increase of 4.4%.

In the materials category, nitrogenous materials were up .8%, from 15,890 tons last year to 16,018 tons in the period July-October, 1957.

Phosphatic materials went down 14.2%; from 4,848 tons in 1956 to 4,161 tons in the four-month period of this year.

Potassic materials made a significant rise of 46.8% with an increase of 257 tons over the 549 tons used in the July-October period of 1956. The total use of potassic materials for those months of 1957, was 806 tons.

Totals, the report states, were 76,698 tons for the four month period of 1957 as compared to 74,720 tons for the corresponding period of 1956. The over-all increase was 2.65%.

KANSAS BULLETIN

MANHATTAN, KANSAS—Kansas Agricultural Experiment Station results with fall seeded wheat, barley, oats and rye for 1957 are available now in a pamphlet compiled by A. L. Clapp, Kansas State College agronomist. Though the 1957 Kansas wheat production at 91,512,000 bu. was the smallest crop since 1935, Mr. Clapp points out that the estimated yield per acre was still the fourth highest in 25 years. Comparisons are made in wheat variety production characteristics and baking quality, as well as in yield and test weight by districts. Fertilizer results on winter wheat also are reported.

Maryland Bankers Pledge Aid to Good Farmers

UPPER MARLBORO, MD.—Soil fertility problems and the importance of sound agricultural credit are being better understood in Maryland agriculture, thanks to a cooperative project between the Maryland Bankers Assn. and the National Plant Food Institute, according to Abe Z. Gottwals, chairman of the agriculture committee of the Maryland Bankers Assn. Announcing "an effective Maryland soil fertility promotion program" with the Institute, he said that the plan is designed to "focus increased attention on the importance of following sound land management practices as prerequisites in good agricultural credit."

Mr. Gottwals explained that the Institute and Maryland bankers jointly are promoting the use of advertising by banks "to carry messages of successful farming requirements to farmers."

"For example," he said, "these advertisements, designed for use in newspapers and other publications, stress the need for soil testing, point to the importance of fertilizers in lowering the per unit cost of production and to the general need to follow the recommendations of agricultural scientists in achieving an economically-sound farming population."

Mr. Gottwals emphasized the interdependence of the state banking profession and the industries whose members have farmers as their customers.

"Jointly," he added, "we mutually are concerned in helping farmers attain greater agricultural independence and we all must use every available opportunity to stress the need of following the recommendations of the Maryland Agricultural Extension Service and Experiment Station. Farmers who adopt their land-grant college recommendations are better customers for bankers and all other businessmen. They are excellent credit risks."

Two Join Sales Staff of Norkem

YAKIMA, WASH.—Two new men have been added to the field staff of Norkem Corp. of Yakima.

E. Ray Carter, formerly Walla Walla County horticulturist for 11 years, joined the sales force in September. Mr. Carter has also been a fruit inspector at Chelan, Wenatchee and Kennewick.

W. Frank Alexander of San Rafael, Cal. also has joined the sales staff.

The men will help with the marketing of a number of new products scheduled for release through Norkem, which is a distributor of agricultural chemicals for 16 national firms.

Robert J. Jones Dies

MILWAUKEE—Robert J. Jones, owner of an insecticide firm here before his retirement in 1953, died recently at the age of 80. He was owner of the Jones Products Co., which he organized and which was discontinued after his retirement.

NEVADA FERTILIZER SALES

RENO, NEV.—Nevada commercial fertilizer sales from Jan. 1 to June 30 totaled 2,928 tons and gypsum 100% sales amounted to 1,061 tons, according to the Nevada state department of agriculture. The 21-0-0 and 16-20-0 grades were the best sellers.

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WANTED . . .

Better Nomenclature System For Fertilizer Solutions

By H. H. TUCKER*
Sohio Chemical Corporation
Lima, Ohio

"Why do we have so many ammoniating solutions? What is a practical basis for selection? Would it be possible to standardize the nomenclature for these various solutions?" These questions in reality are not one, but three separate and distinct questions on the one general subject of solutions.

Why do we have so many ammoniating solutions? Probably for the same reason that fertilizer manufac-

turers have so many grades. There is definitely a need for a variety of solutions.

There are at least four different types of fertilizer manufacturing processes. The granulation, semi-granulation, pulverized, and liquid fertilizer processes all have their own needs and requirements which are not necessarily the same. The dry manufacturer needs solutions which make fertilizers that will maintain dry drillable conditions while the liquid manufacturer wants materials that will remain liquid under all conditions. As a result nitrogen solutions manufacturers are being pressured to

* Before Fertilizer Industry Round Table, Washington, D.C., Nov. 6-8, 1957.

"tailor make" solutions on a prescription basis.

Needless to say this is costly to all concerned. The usable range of nitrogen solutions is limited by solubilities or salting out temperatures of the solutions; by their vapor pressures, by their concentration or water content; by the relation of nitrogen from salts to ammonia or the fixed-to-free ratio; by the salt or salts in the solution and by the effect of the solution on the properties of complete fertilizers in which it is used, both during manufacture, storage, and in its ultimate use on the farm.

Solubilities will determine the temperatures at which various solutions may be used. Vapor pressures, a function of temperature, water content, and ammonia content, determine the equipment for storage and handling. Concentration affects both solubility and vapor pressure as well as the amount of solution phase and moisture content of the end product.

The fixed-to-free ratio affects not only solubility and vapor pressures

but also the amount of solution which can be used at any given ammoniation rate. It also affects the amount of acid needed to neutralize excess ammonia. These in turn determine the amount of nitrogen which can be obtained from solutions.

Different fertilizer manufacturers prefer different nitrogen salts in their product. The salts present and their proportions in the solution primarily affect the solubility of the solution and the volume of solution phase in the end product as well as the condition of the end product both during manufacture, in storage, and in use. The use of urea to change the crystal structure of ammonium nitrate and ammonium chloride is an example of the conditioning effect.

What is a practical basis for selection of a nitrogen solution? This might best be given in outline for first dividing fertilizers into dry and liquid. Dry fertilizers then can be further classified as granular, supergranular, and conventional mixed pulverized. Both dry and liquid fertilizers can then be further classified as to their nitrogen content. A further classification can then be made for periods of the year when the solution will be used such as summer, spring, and fall; and winter. The availability of heated tanks will make some solutions usable over a wider range of temperature conditions.

It is obviously impossible to purchase and handle a different solution for each process and each grade of fertilizer to be made. As a result compromise must be made in every plant.

In the production of dry fertilizers high nitrogen grades use high fixed-to-free ratio solutions as far as consistent with weather conditions, salting out temperatures of the solution and ability to dry the end product. The use of large amounts of ammonium nitrate and/or urea requires low moisture end product.

Medium nitrogen grades use medium fixed-to-free ratio solutions to obtain optimum amounts of fixed solution nitrogen at the desired ammoniation range.

Low nitrogen grades use low fixed-to-free ratio solutions to assure complete ammoniation replacing as much ammonium nitrate and urea as possible with ammonium phosphates.

In all cases, the highest possible ammoniation without excessive conversion of phosphates or loss of ammonia is desirable. This neutralization helps insure condition and stability of product.

Solutions for complete liquid fertilizers are primarily selected for the fixed nitrogen they contain and the salting out temperature they impart to the end product. Urea is generally preferred to ammonium nitrate. However, combination of the two nitrogen salts may be superior to either salt alone for some grades. The fixed-to-free ratio here is very important as it determines the amount of total nitrogen which can be obtained from the solution. It is most important to have near neutrality in complete liquids to minimize corrosive properties of the complete liquid, to prevent ammonia loss and to assure desired solubility. For these reasons the number of nitrogen solutions for liquid fertilizers is much narrower than for dry fertilizers.

Would it be possible to standardize the nomenclature of these various solutions? This no doubt would be possible and will probably have to be the result of a very careful study of the entire problem by a standardizing committee.

In general I believe we all agree there is need for standardization both in analysis and nomenclature to simplify the job of the fertilizer and solutions manufacturers.

I certainly grant that at present there is a lot of confusion on the subject and that this confusion has increased in the past 2 or 3 years. As of Jan. 1, 1955, there were only

(Continued on page 21)

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Better Selling

The Progress of

Pacific Northwest Plant Food Assn. Demonstrational Farms

By Grant Braun

EDITOR'S NOTE: The Pacific Northwest Plant Food Assn. is sponsoring three demonstrational farms in Washington, Oregon and Idaho. The author of the accompanying article, Grant Braun, chairman of the soil improvement committee of the association, has played a prominent part in the advances made with improved fertilization practices on these three farms. The progress in production shown on these farms has received considerable praise and attention not only from the fertilizer industry but from the general population in the Pacific Northwest.

▼ ▼

Three demonstrational farms are sponsored by the Pacific Northwest Plant Food Assn. Since the fertilizer industry has a particular financial interest in these demonstrations, and since pasture and forages represent to the industry the biggest fertilizer potential for the sales of mixed goods and simples in the Pacific Northwest today, this subject of Washington, Oregon, and Idaho demonstrational farms, is a timely one.

Why these three farms should have a particular importance to the fertilizer industry can probably best be illustrated or placed in perspective by the soil test summaries from the testing programs of the state colleges of Washington and Oregon. Projecting the soil test results from the samples analyzed, to date, to a fertilizer potential (and it is understood that these figures will change somewhat with a larger number of samples), it has been stated that in Washington the use of both phosphorus and potash should be some 600% greater than was used in the state in 1956. In Oregon, the use of phosphorus based on soil tests should be some 1,000% greater, and for potash some 800% greater, than the use last year. With a fair understanding of crop acreage, the crops presently being fertilized and the areas in which the soil test results apply, it is readily seen that when we talk about fertilizer potentials in the Pacific Northwest, especially mixed fertilizers, we are talking in the main about the potential on forages and pastures.

The demonstrational farms were set up to demonstrate and promote the proper use of fertilizers on forages and pastures along with other

approved practices for a successful dairy operation.

Although demonstrational farms haven't been new since the turn of the century, it is my understanding that these three projects have a unique feature which sets them apart from farm demonstrations in the U.S. today. That is, the local community has taken an active part both in the financial aspects of the projects as well as being the major force in promoting the results from the farms through field days and general publicity. I don't mean to infer that the Pacific Northwest Plant Food Assn. and its members did not plan the vital part, but the main promotional energy was derived from persons not directly associated with the fertilizer industry. Because of this feature, the results of the project have been more readily accepted and have a broader application.

All three of the demonstrational farms were organized in a similar manner: A technical committee was formed with the county agent as chairman, and this committee worked out the fertilizer and other recommendations to be followed while the project was in effect; the members of this committee were specialists from the land grant colleges, experiment stations, U.S. Department of Agriculture agencies, along with technical men from various industries.

An over-all committee was also formed and, as indicated, this committee's purpose was to raise the necessary funds to finance the second year of the project, along with the promotional duties. The chairman of this committee was always a local man and for reasons that are fairly obvious, this position was sometimes filled by a banker.

On this committee were representatives from the granges, farm bureaus, dairy associations, chambers of commerce, bankers, representatives from the press and radio stations along with the fertilizer dealers, implement dealers, and members from the Pacific Northwest Plant Food Assn. In each project the committee numbered over 30 members and in all instances, the members took a very active part and aided the projects greatly.

In regard to field days, it has been related that over 2,000 people have visited the Brad Benedict Farm in Washington during a three-year period, over 800 people have visited the Blaine Marks Farm in Sandpoint, Idaho, and over 1,000 visitors have already been on the Lennox Blatchford Farm in Hillsboro, Ore., and the project has another year to go. It may be worth noting that 500 visitors attended the last field day on the Oregon project, and although this number doesn't sound overly impressive, it was the largest attendance for any field day of any type in Oregon.

The projects have also been well publicized on a local, regional, and somewhat national level. Articles have appeared in Ford Farming, Better Crops, Croplife, Washington & Idaho Farmer, N.W. Dairymen, Commercial Fertilizers and Commercial Review. Excellent local coverage of the projects has been obtained through newspapers, radio, and on the Oregon project we finally became

of age and made our debut on television.

The cost of these three projects to the Pacific Northwest Plant Food Assn. and certain mixer members of the association, has approximated \$4,000. If a monetary value was placed on the time devoted to these projects by the members of the technical and over-all committee, plus the money raised locally and the free publicity, it is difficult to ascertain how the projects could be purchased for less than \$30,000. It appears that the association has made a good investment in these demonstrational farms, even greater than the proverbial farmers' return from the use of fertilizer.

AGRONOMIC HIGHLIGHTS: The Washington demonstrational farm was located on the Brad Benedict farm, in Lynden, Wash., and it comprised some 60 acres. The project was started in 1952 and completed in 1956. At the start of the project, the farm was very run down and if it weren't for the project worked out by the

technical committee, the Benedicts wouldn't be on the farm today.

In general, Mr. Benedict was started off on a N.P.K. mix program with supplemental nitrogen. This program followed general college recommendations and it was quite adequate to get the project off to a good start. An interesting point, however, is that the fertilizer program had to be changed over a period of five years to meet the increased requirements of crops and soils.

As an illustration, field A, a peat soil, in a grass-legume pasture, 75 lb. of K₂O was the only fertilizer used before the start of the project. In 1952, the first year of the project, an application of 60 lb. N, 60 lb. P₂O₅, and 60 lb. K₂O was made. In 1956, the fertility program on this field was continued by applications of 80, 60 and 190 lb. NPK. In Field C, a mineral soil, in a grass-legume pasture, the fertilizer used before the start of the project was six tons of manure an acre. In 1952, the fertilizer program

(Continued on page 14)

SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Ambitious dealers are constantly on the alert in looking for ways to sell more merchandise and make more money. In the last issue, this department presented the views of Ernest Harper, sales supervisor, Nitrogen Division, Allied Chemical & Dye Corp., on improving the buying practices of the fertilizer dealer. As a continuing and concluding phase of Mr. Harper's presentation, the following information deals with improving selling and service methods by the dealer, with the view of increasing sales and profits.

Should a dealer cut prices to increase volume?

There are dealers who do a large volume business, yet at the end of the year discover their over-all percentage of profit is disappointingly low. Volume is essential to profitable operation, but a dealer can't lose money on ton sales and make up for it through volume. A proportionate mark-up must be maintained on each ton sold to achieve satisfactory net profits after overhead expenses are deducted.

Engaging in indiscriminate price cutting is a practice that can involve a dealer in ruinous competition and discredit the industry as a whole.

Selling an honest product, honestly priced according to its merits will prove in the end the more profitable course. Furthermore, there is no point in a dealer creating a greater volume business for himself than he can adequately service.

How can a dealer determine what his most profitable sales goal should be?

He should make a realistic survey of the extent of territory he can adequately service with existing equipment and personnel. Then, make an estimate of the maximum total ton-

age consumption in the area. The resulting information should help him in determining his goal in the form of potential cars or tons he can sell, or acres he can service.

What can a dealer do to stimulate sales?

First, arrange for an adequate advertising budget and plan an advertising campaign geared to get the most effective response in his own territory. When Mark Twain was editor of a small town newspaper, a subscriber wrote in to say he found a spider in his paper. He wanted to know if this indicated good luck or bad luck.

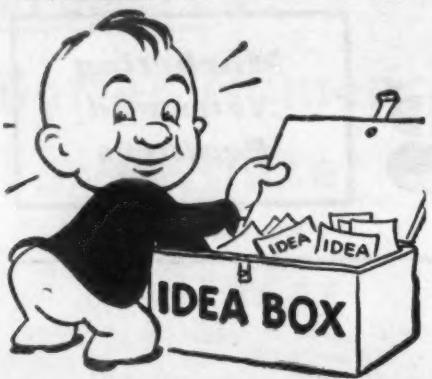
"Finding a spider in your newspaper," Mark Twain replied, "indicates neither good luck nor bad luck. The spider was merely looking over our paper to see which merchant was not advertising so he could go to that store, spin his web across the door and lead a life of undisturbed peace ever afterward."

In addition to paid advertising, there are legitimate ways to secure considerable additional publicity. Knowing the editor or farm editor of the local newspapers can be a big asset to a dealer. Editors usually are glad to print reports of good yields in the community, together with the fertilizer used, and method and rate of application. Arrival of carload shipments, donations to FFA and 4-H or-

(Continued on page 15)

QUOTE

"Successful farming depends upon how fully and wisely the basic resources which a farmer possesses are used. This has always been true and it is no less so today. If anything, it is far more imperative under present day situations than ever before. Fertilizer and lime contribute to increased productiveness and the more efficient use of basic land resources, and thereby strengthen agriculture's position in a dynamic economy." —J. W. Fanning, chairman, division of agricultural economics, University of Georgia.



What's New...

In Products, Services, Literature

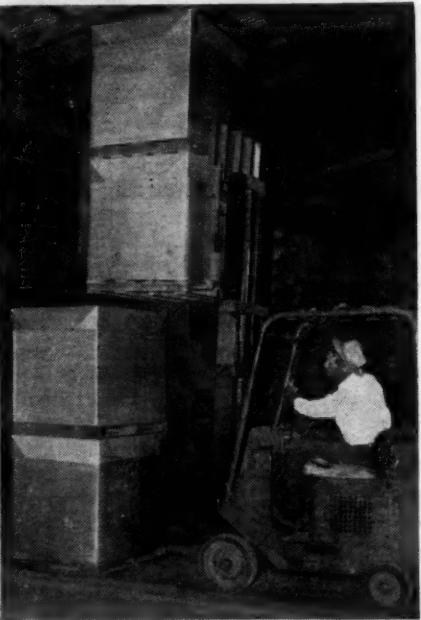
You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6655—Tomato Hormone Spray

A new tomato hormone spray, called by the trade name, "Tomato Set," is available from the Miller Chemical & Fertilizer Corp. The company announcement states that the spray was developed by Dr. E. M. Emmert at the University of Kentucky experiment station, that a patent has been applied for by the Kentucky Research Foundation, and that the Miller company has been licensed by the foundation to manufacture and distribute the new spray. Application of the product can be made broadcast over the entire plant and the set and fruit size can be increased, company officials state. The product is a combination of boron and a synthetic hormone and can be mixed with insecticides and fungicides, if desired. Details may be secured by checking No. 6655 on the coupon and mailing it to Croplife.

No. 5829—Corrugated Bulk Container

A corrugated bulk container which holds from 1,000 to 1,500 lb. of a product is being manufactured by the Gaylord Container Corporation Division of Crown Zellerbach Corp. The container is said to provide a



clean storage box with a cover for protection from contamination and makes it possible to obtain maximum storage capacity safely and efficiently in a warehouse. The corrugated containers can be knocked down flat for easier storage until they are to be used again. The containers can also be used for shipping merchandise. Check No. 5829 on the coupon and mail it to secure details.

Send me information on the items marked:

- No. 5829—Bulk Container
- No. 5838—Towing Tractor
- No. 5844—Vacuum Cleaners
- No. 5870—Tank Car
- No. 6645—Surfactant
- No. 6646—Booklet
- No. 6648—Insecticide
- No. 6649—Spreader

(PLEASE PRINT OR TYPE)

NAME

COMPANY

ADDRESS

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

- No. 6650—Leaflets
- No. 6651—Garden Chemicals
- No. 6652—Bagging Unit
- No. 6653—Chemicals Folder
- No. 6654—Sprayer Catalog
- No. 6655—Tomato Hormone
- No. 6656—Lubricant Booklet
- No. 6657—Can Printing

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Reader Service Dept.

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No. 6656—Lubricant Booklet

A new booklet published by Monsanto Chemical Company's Organic Chemicals Division claims that "major savings in air compressor maintenance costs and greater safety from flash fires and explosions can be obtained with Pydraul AC, a fire resistant synthetic lubricant for air compressors." The auto-ignition temperature of the fluid is said to be greater than 1,100° F. Carbon deposits on exhaust valves and in interstage equipment are reduced with the lubricant, it is claimed. Secure the booklet by checking No. 6656 on the coupon and mailing it to Croplife. Please print name and address.

No. 6657—Can Printing

A portable printing device for printing on 5-gal. cans has been developed by the Metal Products Division of the Chapman Chemical Co. The machine is called by the trade name, "Print-A-Can Printer," and is said to handle up to 500 cans per hour with one inexperienced operator. The unit weighs 160 lb., is equipped with casters, can print markings stable enough to exceed requirements for government contracts, and is low-cost, company officials state. Secure details by checking No. 6657 on the coupon and mail it to Croplife.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 5844—Vacuum Cleaners

A new line of heavy duty wet-dry vacuum cleaners has been introduced by the Clarke Sanding Machine Co. The line includes six units ranging from a $\frac{1}{2}$ h.p. model with $2\frac{1}{2}$ gal. wet and $\frac{1}{2}$ bu. dry capacity to a $1\frac{1}{2}$ h.p. conversion unit which converts a 55-gal. drum into a vacuum cleaner tank with 50 gal. wet and $6\frac{1}{2}$ bu. dry capacity. Check No. 5844 on the coupon and mail it to secure details.

No. 6652—Bagging Unit

The Chase Bag Co. has announced a new bagging unit for the fertilizer industry. It is called the "Southland Packer" and it is described as a completely automatic, all-electric device for filling and weighing open mouth textile or multiwall paper bags. It is manufactured by the Chattanooga Boiler & Tank Co. and is distributed exclusively by Chase. It is claimed that the unit will handle 50-, 80- and



100-lb. multiwall paper bags at 25 bags per minute as a typical working speed. Sustained high accuracy of weights over an extended run is guaranteed. Fertilizer and any other granular or free flowing material can be packed. Chase officials state: "Minimum change-over time from one analysis to another is an outstanding feature." Cylindrical hoppers and buckets allow a clean and complete flow of material. Simplicity of design reduces maintenance costs and problems. Parts are standardized and can easily be interchanged in plants where more than one packer is in use. No air or hydraulic fittings are used. The packer is made from 12 gauge or heavier steel plate and requires no external bracing for rigidity. The feeder is of the continuous operating type, using a $\frac{1}{2}$ h.p. gear-enclosed motor to operate its endless belt, over 8 in. self-cleaning pulleys. Check No. 6652 and print the necessary information on the coupon and mail it to Croplife to secure details.

No. 6645—Liquid Surfactant

A vegetable oil source liquid surfactant, called by the trade name Sole-Onic PGE, is described in a released by the Sole Chemical Corp. Company officials say that two of its uses are as a wetter-sticker adjunct for agricultural sprays, and as an anti-corrosion agent in water-containing aerosols. The bulletin may be secured by checking No. 6645 on the coupon and mailing it to Croplife. Please print name and address.

No. 5838—Towing Tractors

The Frank G. Hough Co. has introduced its first two "Paymover" towing tractors for commercial applications. The two machines are the model T-50 with 5,000 lb. drawbar pull and the model T-60 with 6,000 lb.



drawbar pull. They are two-wheel drive models, and feature torque-converter drive and automatic transmissions. A wide variety of coupler attachments is available. Check No. 5838 on the coupon and mail it to secure details.

No. 6646—Product Booklet

The family of chemical products for industry and agriculture of the Diamond Alkali Co. is described in the

fifth edition of a booklet called "The Story of Diamond Chemicals—Chemicals You Live By." This revised and enlarged, 32-page booklet presents a panoramic picture of these basic materials, their principal applications, and their production.

Fourteen major products or product-groups are discussed in digest form. They are: Soda ash, caustic soda, chlorine, chlorinated methanes, bicarbonate of soda, sodium silicates, calcium carbonates, chromates, specialized chemicals, organic chemicals, plastics, cement, coke and coke by-products, and agricultural chemicals, including lawn and garden chemicals. A copy is available on request. Check No. 6646 on the coupon and mail it to Croplife. Please print name and address.

No. 6654—Sprayer, Duster Catalog

The Oakes Manufacturing Co., Inc., subsidiary of the Food Machinery & Chemical Corp., has released its "Sanitized Bean Oakes 1958 Sprayer and Duster Catalog." The catalog shows a line of tank and hand sprayers, dusters and power sprayers for use on the farm and in the garden. John Bean Division and Oakes are sharing production responsibilities for these products. New additions to the products which Oakes will sell through its jobber and dealer accounts are the "Spartan" and "Trojan" lines of power sprayers. Secure full details by checking No. 6654 on the coupon and mailing it to Croplife. Please print necessary information on the coupon.

No. 6650—Soil Pest Leaflets

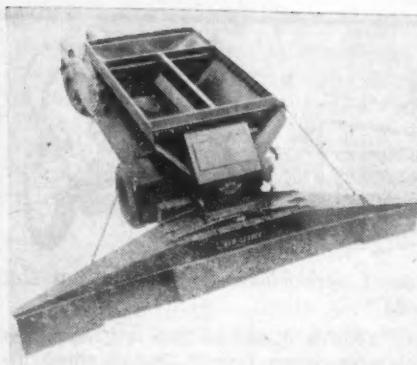
How major soil pests can be treated by soil fumigation is described in a series of three new leaflets published by the Stauffer Chemical Co. Practical procedures are outlined for the use of a product trade named, Vapam, to kill annual and perennial weeds and germinating weed seeds, soil fungi which cause seed decay and damping off, nematodes and such insect pests as the garden centipede. Each of the leaflets deals with a specific agricultural problem—growing finer turf, flowers and shrubs, and vegetables. Copies are available without charge by checking No. 6650 on the coupon and mailing it to Croplife.

No. 6653—Industrial Chemicals Folder

Sohio Chemical Co. has prepared a folder on its industrial chemicals, which include anhydrous ammonia, aqua ammonia, nitric acid, urea and 83% ammonium nitrate solution. Specifications, descriptions, uses and shipping information are listed for each of the products. The folder states that rail or truck delivery is available and that technical assistance and laboratory service are offered without obligation. Secure details by checking No. 6653 and printing the necessary information on the coupon and mailing it to Croplife.

No. 6649—Fertilizer Spreader

The Highway Equipment Co., Inc., announces a new model, the "New Leader 3 Material Spreader." Nitrogen, phosphate, and potash are spread to the proper proportions as determined by the soil analysis of the land to be fertilized, it is claimed. The announcement states: "The spreader hopper is divided into separate compartments for three different fertilizers. A 36 in. wide heavy-duty 4-ply belt over a chain conveyor carries the fertilizer back to the cross augers at the rear of the machine. Each fertilizer is conveyed back on a separate section of the 36 in. belt. Sealer strips along the sides and at the end of the individual compartments keep the three fertilizers separated until they are dropped into the cross auger at the rear of the machine. The three



fertilizers are first augered to the left, dropped into another auger, then augered back to the center of the spreader where they are dropped directly into twin distributor fans which uniformly distribute the fertilizer into the streamlined hood for an accurate spread. The hood, which spreads a 24 ft. width, is of sturdy construction and yet lightweight enough so that it can be folded easily by one man for road travel. The steep sloping sides of the hopper and the wide belt conveyor eliminate bridging. Special cleanout doors are provided for inspection, servicing, and daily cleaning." Secure details by checking No. 6649 on the coupon and mailing it to Croplife.

No. 6651—Home Garden Chemicals

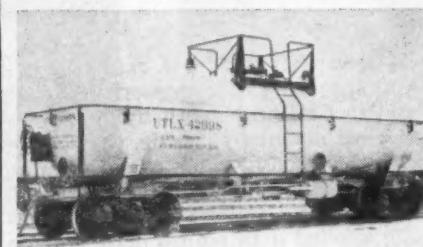
Several new chemical formulations bring to a total of 28 the number of insecticides and other chemicals which are in the Du Pont Company's line of products for the home gardener. Among the new products are an insecticide which is a combination of methoxychlor and malathion and 72% chlordane insecticide. Also new are an insect repellent and an aerosol dressing for tree wounds. Secure details by checking No. 6651 on the coupon and mailing it to Croplife.

No. 6648—Insecticide Booklet

A new booklet on the application of Phosdrin insecticide has been prepared by the Shell Chemical Corp. The booklet covers handling precautions, respiratory devices, details for aerial application, symptoms of toxication and first aid treatments, and information for physicians. The importance of following directions right to the letter is emphasized in the booklet. To secure a copy of the booklet without cost, check No. 6648 on the coupon, print the necessary information and mail it to Croplife.

No. 5870—Tank Car

A new multi-purpose tank car which incorporates two fundamental changes in tank car design—elimination of the dome and underframe—is announced by the Union Tank Car



Co. Called the "HD" tank car, the unit serves where previously four separate tank classifications were required, company officials say. With only minor modifications the new tank car can be used as a general service car; for carrying acid; as an insulated car; and as a low pressure car. Secure details by checking No. 5870 on the coupon and mailing it to this publication.

COLORADO MEETING SET

DENVER—The annual meeting of the Colorado Agricultural Chemicals Assn. will be held on Jan. 30-31, at the Cosmopolitan Hotel, Denver. The new officials for 1958 will be announced at the meeting.

Oregon Stores Increase Sales By Helping Solve Farmers' Problems

By JESS BLAIR
Croplife Special Writer

Dispensing information to farmers shares the attention with improved sales and business methods of personnel of the Pacific Supply Co-op which has retail stores throughout Oregon.

Key people are trained not only in salesmanship but in the worth of farm chemicals and the farm problems of the area. An example is O. D. Dearborn, area manager at Ontario, Ore., who has been a leader in promoting better farm methods in the Snake River Valley and the surrounding areas.

"We've got to do more than just sell," Mr. Dearborn says. "Farming is becoming more scientific all the time. It requires a technical knowledge that the busy farmer cannot always acquire. So we try to breach the gap between the dirt farmer and the agricultural scientist."

Mr. Dearborn saw the need for a complete fertilizer and insecticide guide for that area, so he sat down and wrote one. It wasn't quite that simple, however, because he had the help of the company's own scientists, county agents, entomologists and experiment stations. He directed the contents and planned it for eastern Oregon and western Idaho.

One reason for its popularity is that every insect listed may be found on the farms in that particular area. Many farmers now ask for the guide, and use it almost as much as the farmer 50 years ago did his almanac. Most of the bankers along the Snake River request copies and follow it closely when making loans for fertilizer or insecticides.

The insect guide fills 10 full pages, with from four to 10 insects listed on each page. It gives the common name of the pest, such as onion maggot or pea weevil; gives the name of the crop susceptible to attack, then explains kinds of insecticides to use and how to use them.

"I think the guide has been of tremendous help to our own personnel and to members, as well as to other farmers who do not ordinarily trade with us," Mr. Dearborn explains. "One reason is that it was written strictly for this area along the Snake River. It lists every known insect that is harmful to crops or livestock. We even have the insects that are troublesome to chickens and turkeys."

Mr. Dearborn says half of selling is knowing what to sell, then convincing the farmer how he can make money by buying such a product.

"The use of fertilizer and insecticides has grown by leaps and bounds the last two or three years," he points out. "It is because the farmer was told about all the farm aids. When one comes into the office, or when we go out to his fields, soil and cropping problems are discussed. Before long he comes to rely upon us as a clearing house for the latest information."

How does the county agent fit into this plan?

"The county agent is a busy man," says Mr. Dearborn. "With his duties, he can't possibly visit every farm when a problem arises, and neither can the entomologist. It's up to the dealer or someone in the firm to learn the answers, and then go out and help that potato grower or alfalfa farmer. By not doing this, the dealer is overlooking his greatest opportunity to build helpful influence and increase sales."

Mr. Dearborn is a former school teacher who never got entirely away

from the profession. He still spends much of his time training personnel and showing farmers how to increase yields.

"In this business a nice, attractive store helps," he says, "and good business methods must be followed. But the key thing, I believe, is in helping the farmer. When you show him how to do a better job and make more money farming, then he will trade with you. If you are merely a buyer and seller of farm chemicals, with no real knowledge of his farming problems, then he will trade elsewhere."

Emulsol Announces Two Insecticide Emulsifiers

CHICAGO—The laboratory of Emulsol Chemical Corp., Chicago, (division of Witco Chemical Co.) has developed a new pair of emulsifiers for insecticide formulations.

Known as "Emcols H-900 and H-902" the products may be used separately or in combination for a number of insecticides, among them aldrin, BHC, chlordane, DDT, dieldrin, endrin, heptachlor, lindane, parathion, methyl parathion and toxaphene, the makers say.

Recent additions in plant equipment and improved procedures for quality control and uniformity in performance are reasons cited by Emulsol for the development of this new pair of emulsifiers.

Sales Agents Appointed

PORTLAND, ORE.—Great Western Chemical Co. of Portland and Seattle, has been selected as exclusive sales agent for the Chemical Lime Co. of Baker, Ore. A new industry, Chemical Lime Co., the company has just completed a \$2,000,000 plant. Great Western will distribute under the "Blue Mountain" trade name.

Great Western was started in January, 1956 by W. C. McCall and R. H. Wilson. At that time it purchased the Carl F. Miller Co. of Seattle, Wash.

from plowing to harvest time

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Choice of over 400 interchangeable orifice tips for every farm need. For information, write for Catalog 30.

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A PROVED AND DEPENDABLE SOURCE OF SUPPLY



By AL P. NELSON
Croplife Special Writer

When Oscar got to work at 6:45 that fall morning, he was astonished to see about six or seven girls in their late teens, standing outside the farm supply store door. Oscar always got to work before anyone else, and now, as he saw the group of girls, some in Bermudas, some in red or yellow dresses with low cut necks, he became annoyed.

"Ach, what has happened?" he thought. "Has Tillie quit and told her friends her job is open, Trouble . . . trouble . . . trouble . . ."

As Oscar approached the door of the farm supply store, the girls sighted him. Squealing with laughter, bubbling with good spirits, their eyes sparkling, they rushed forth to meet him like a swarm of bees. One took hold of his right arm, one took hold of his left. Others got around in front of him. Brown eyes, blue eyes, black eyes looked at him eagerly, some even flirtatiously. Red hair, blond hair, black hair, brown hair—Oscar had never seen so much hair.

With so much femininity around him, hemming him in, with the smell of perfume, many perfumes, assailing his nostrils, Oscar suddenly felt very strange. Strange sensations ran through him, sensations he had not experienced for years, and he was very disturbed.

"Oh, Mister McGillicuddy!" cried two of the girls. "We want to register for the contest for Farm Fertilizer Week."

"I wanna be Miss Nitrogen!" shouted a pretty redhead, thrusting her face close to Oscar's and smiling so that he blinked his eyes.

"I want to be Miss Phosphorus!" exclaimed a black-eyed, dark-haired girl with an ample bosom.

A baby-faced, plump girl in Bermudas looked up hopefully. "I'll register for the Miss Potash title!" she said with some resignation.

Oscar's face got red. He pushed the girls away, then wished he hadn't and that made him angrier than ever. "Stop! Stop! Stop!" he cried. "I am not Pat McGillicuddy. Himmel, I am glad of that. I have nothing to do with this foolishness."

"But the clerk at the drug store told us last night that Mr. McGillicuddy is going to register all entrants here," said the red-headed Miss Nitrogen candidate. "Can I ever use that prize of a new fall outfit and a week at a nice hotel in Chi! Oo la la. Let's wait for McGillicuddy, girls."

They crowded close to Oscar as he stuck his key into the door lock. Laughter, giggles, perfume, rustling clothes, surged around him. And when he did get the door open, the girls pushed so hard Oscar almost fell on the floor.

Shaking himself like an angry rooster, Oscar went to his desk, took off his old felt hat. "Ach, du Lieber" he muttered under his breath. "Fertilizer store—insane asylum—Das ist genug!"

But the girls would not let him alone. They crowded around the high railing fencing off the office from the salesroom. Gay and happy they leaned on the rail making eyes at him, and Oscar saw glimpses of things he shouldn't see. Now he knew Minnie was right when she said it was terrible what clothes some ladies wore, even at church doings.

"McGillicuddy never comes to work until 10," he snapped at the girls.

"That's the kind of working man he is."

"We'll wait for him!" announced the red head who wanted to be Miss Nitrogen in the Farm Fertilizer Week parade and contest. "Come on girls, let's have a little Elvis to pass the time. Let the farm chores wait till we git home. Oh, I'm nothin' but a contest entrant—and—"

Tillie came in and her eyes mirrored astonishment and shock. Then behind her came Pat McGillicuddy and the local newspaper photographer, a lean, lanky fellow with a cigarette hanging from the corner of his mouth.

"Hey, this is hep, Pat," he chuckled. "Get into the act. Let the girls circle around you singing and dancing and you show you like it like all get out. Boy, that shot should make the front page."

Pat did as he was told, and there was more laughing, giggling and bubbling activity. Several young farmers came in to buy fertilizer and stood gaping and listening, smiles on their faces.

One, Jerry Hawkins, said to Oscar, "Hey, Oscar, do one of them gals go along with a ton of fertilizer? If so, put in my order right now. I'll take that redhead as a premium."

Oscar stiffened. "We run a respectable business," he said, sharply. "At least I do. Ach, I do not have anything to do with these monkey-shines. Fertilizer week contest! Bah, such craziness!"

"Aw, come now, Oscar," said Jerry Hawkins. "You can't tell me you

don't appreciate this. You're not that old."

"This is business and only business should go on here," Oscar cried angrily. But no one except Jerry heard him, for the contest entrants were now crowded around Tillie's desk, while Pat dictated to Tillie Mason how to register the girls.

"Now, girls," Pat said, "our committee has decided that any farmer who buys a ton of fertilizer during Fall Fertilizer Week will be eligible to receive 10 votes. It is up to you girls to contact farmers and ask them to vote for you. The girl with the highest number of votes will be named Miss Nitrogen, the second Miss Phosphorus and the third Miss Potash. There'll be adequate prizes for each of you."

"Boy, watch me make eyes at every farmer I know," purred the farm girl who sought the Miss Nitrogen title. "I'm gonna read every book I know on fertilizer, too, so I'll know what I'm talkin' about."

"We'll help you," Pat smiled happily. "Our club is going to run lots of ads urging farmers to buy fertilizer this fall and apply it and giving the reasons why it's a good investment for them. And we'll also manage to publish a picture of each entrant."

"Oh, goodie!" cried the little fat girl clapping her hands. "If my picture is published maybe I'll get a date. There must be lots of fat boys that read the paper. Ooh, I'm gettin' all excited."



FARM SERVICE DATA

Extension Station Reports

Farmers can lessen the effect of the present cost-price squeeze in which they find themselves, if they will use fertilizer as recommended, according to the California Fertilizer Assn.

The added expense involved in using fertilizer as recommended by qualified authorities is limited to the cost of the fertilizer and its application, and to the additional cost of harvesting a much bigger crop, said the association. Interest, taxes, or rental on the land will cost them no more, nor will irrigation, thinning, cultivation, pest control and other production costs which remain constant, regardless of production per acre.

The association credits the U.S. Department of Agriculture with the statement that farmers use only about 50% of the fertilizer which is recommended for maximum crop production on an economic basis, but, in spite of this, the fertilizer which is used accounts for about 25% of the total current crop production. Full use of fertilizer will increase farmer net profit by increasing the production per acre, it was pointed out.

In California, \$1 invested in fertilizer will return an average of \$5 to \$6 additional profits.

The association recommends that only the best land be used for production of the cash crops which can be marketed to good advantage, and without adding to surplus stocks. Proper use of fertilizer and other approved cultural practices will permit

production of the same quantity of higher quality crops on reduced acreage. The land remaining can be planted to forage and other crops, the statement continued.

The association recommends the local fertilizer supplier as a good source of information concerning the plant food requirements of the soils and crops in the area which he serves.

A new chemical that can halt potato sprouting has passed its first tests in California with flying colors.

Called maleic hydrazide, the chemical has already gained acceptance as a weed killer. In recent experiments, University of California plant scientists applied it to potato plant foliage before harvest and produced tubers that showed little or no sprouting and lost none of their market quality after six months in storage.

This effect may help potato growers "hold over" part of their crops, either by leaving the potatoes in the ground or by gathering them into storage sheds, in order to catch a more favorable market later in the year.

Results of the tests with maleic hydrazide were reported by Herman Timm of Davis and James Bishop of Bakersfield, both University of California specialists in vegetable crops.

The specialists tested maleic hydrazide treatments on five potato varieties—White Rose, Russet Burbank, Redkote, Kennebec and Pontiac. In

concentrations of 3,000 parts per million or more, the chemical applied two or three weeks before harvest prevented sprouting of potatoes held at common storage temperatures (45 to 55°) and in a controlled temperature room (68°). More tests are in progress in the San Joaquin Valley to study the chemical's effect on potatoes held in ground storage.

"We found no significant difference in yield or specific gravity of the tubers after use of maleic hydrazide," Mr. Timm reported, "and there was no difference in chipping quality of potatoes from treated and untreated plants."

But potatoes treated with the chemical can't be used as seed stock for another crop, the specialist pointed out. Even applications of gibberellic acid, a powerful sprouting stimulant, failed to break the dormancy imposed on potatoes by maleic hydrazide.

Of the two types of maleic hydrazide available at present, the specialists chose MH-40 for their tests on potato sprouting. Another type MH-30, is useful as a weed killer but could not be recommended for use on potatoes because of its toxic effects.



MCP and 2,4-D were described by researchers as two herbicides practical for use in rice at the sixth annual field day on the Biggs Rice Experimental Station near Sacramento, Calif.

Kenneth L. Viste, U.S. Department of Agriculture, said MCP costs more but probably saved more.

Growers were warned that if 2,4-D is used they should wait for about two months after planting to avoid injury to rice plants.

Harry Lange, University of California entomologist, said a survey is under way of the tremendous variety of insects—harmful, beneficial and neutral—found in rice fields. He told the group there are about 30 parasites of the rice leaf miner alone.



Organic mulches have not controlled citrus nematodes in orchard experiments conducted by University of California scientists.

This practice, used by some growers, has shown no effect on nematode numbers, they report after testing mulches in Riverside, San Bernardino, Orange, Ventura and Tulare counties. They used materials such as hay, manure, Douglas fir shavings and cotton-gin waste.

"No real differences in the number of citrus nematodes on the roots of mulched and nonmulched trees were observed," report Oscar F. Clarke, principal laboratory technician, Dr. Richard C. Baines, nematologist, and Paul W. Moore, specialist.

"Certain fungi and other organisms do capture and kill citrus nematodes, but the parasites and nematodes studied seemed to achieve a biological balance that was not affected by mulching," they noted.

Growers to Continue Ton Per Acre Nut Club

PORLAND, ORE.—The Nut Growers Society of Oregon and Washington is continuing the Ton Per Acre Nut Club in 1957, according to R. E. Kerr, Eugene, society president.

This project was started in 1956 to "foster, encourage and call attention to those practices that will increase production and promote the general welfare of the walnut and filbert industries in Oregon, Washington and British Columbia."

A grower to be eligible for the Ton Per Acre Nut club must have a minimum of five acres of walnuts, filberts, a combination of the two, or a nut crop interplanted with other tree crops.

Water Supply Better In West, USDA Says

WASHINGTON — Encouraging prospects for next season's water supply in the irrigated West except for the lower Southwest were indicated in a fall water report by the U.S. Department of Agriculture.

The 17-state report, prepared by the Soil Conservation Service's cooperative snow survey section and released by administrator D. A. Williams, credited the coming year's favorable outlook to improved reservoir storage resulting from the good 1957 snow year and relatively wet mountain soils. They indicate, the report said, "a fair to good water supply for 1958 if the snow pack next winter is near normal."

The favorable 1957 water report and 1958 outlook do not extend, however, to southern New Mexico, the Salt River Valley of Arizona or southern California, where years of

drought have depleted water reserves too severely for them to recover in a single good year. But on the fringe of last year's drought area in Colorado, Utah, New Mexico and Wyoming the report described the improvement as "remarkable," because of far above normal precipitation in April and May of 1957.

DEC. 5-6 MEETING

BOISE, IDAHO—Idaho seed processors will inspect the latest in cleaning machines at a school scheduled here Dec. 5-6 by the Idaho Seed Council. Ralph Kelly, president of the council and a representative of Northrup, King & Co., Boise, said plans have been made with equipment firms to have more than a dozen cleaning devices for demonstration. In addition to practical demonstrations of various machines, there will be a discussion and demonstration of gravity separation and efficient operation of a screen and air cleaner.

New Mexico Use of Fertilizers Increases

STATE COLLEGE, N.M. — New Mexico farmers used 30% more commercial fertilizers in the July-September quarter of this year than in the corresponding quarter of 1956, reports Russell W. Ludwick, chief of feed and fertilizer control for the New Mexico state department of agriculture. The tonnage for the recent summer quarter totals 4,732.

Use of ammonium sulphate showed a gain of more than 200%, he reports. Farmers used 655 tons this summer, compared to 217 tons used in the same period of last year. Ammonium nitrate was next with a gain of more than 150%. Farmers used 518 tons in the third quarter this year and only 206 tons in the 1956 period. Use of 46% superphosphate totaled 140 tons, a 50% gain over the 95 tons used in the three summer months last year.

Washington Garden Store Gets New Owners

EDMONDS, WASH.—Jim Landry and Joe Bays are new owners of Ken's Feed and Garden store here. They recently purchased the business from Kenneth Perin. The new owners will expand the line of garden supplies and power lawn equipment. They will also add a garden equipment rental service.

LOWER WESTERN ACREAGE

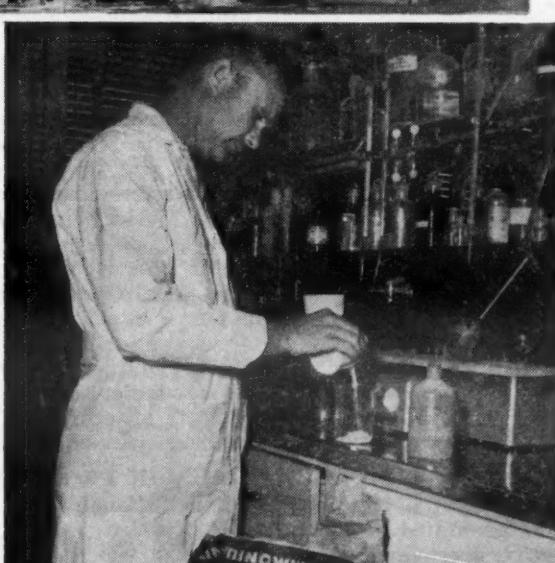
PORLTAND, ORE.—Oregon strawberry growers, who took a real price beating during the past harvest season, have indicated they will pick at least 3,300 fewer acres of berries in 1958 than this year, reports the Oregon U.S. Department of Agriculture crop reporting service. Washington berry men plan to harvest 800 fewer acres and the nation's total strawberry acreage will be down 8% from 1957, but slightly above average.

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Prilled Ammonium Nitrate

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FROM PLANT TO FIELDSIDE**

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BUILT-IN "MOISTURE BARRIER"—You get double protection against damaging moisture when you specify Brea Brand. Prills are coated, then packaged in non-porous bags to further seal in quality. Photo above demonstrates effectiveness of polyethylene-lined bags.

SAMPLED TO GUARANTEE QUALITY—Each shipment of Brea Brand dry fertilizer is quality-checked before delivery is made. While they are in storage, supplies of prilled ammonium nitrate are inspected in a never-ending program of rigid quality control.

UNIFORM, FREE-FLOWING PRILLS—Careful, uniform sizing and coating produce free-flowing Brea Brand Prilled Ammonium Nitrate. Prills apply evenly regardless of the application rate, are easy to apply by ground rig, aircraft, or sprinkler and surface irrigation.

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Same-day rail or truck shipment.

Fieldside delivery to save handling costs.

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

The Middle West Soil Improvement Committee voted to join the National Plant Food Institute in the latter's broad program of developing the fertilizer market potential throughout the U.S. In a subsequent move, the NPFI accepted the Middle West group and the effective date for the merge was set for Jan. 1, 1958. Zenas H. Beers, executive secretary of MWSIC will become midwestern regional director of NPFI on that date.

Pesticide manufacturers were given until Dec. 31 to submit their views on a proposed amendment to regulations for labeling various pesticides. Under the provisions of the proposed law, no label would be accepted that directly or indirectly implies recommendations or endorsement of products or their ingredients by any federal agency.

A seven point program designed to boost fertilizer use in the South by some 7.8 million tons over a period of ten years, was presented by Dr. Russell Coleman, executive vice president of the National Plant Food Institute, at the Southeastern Fertilizer Conference held in Atlanta. He said the tonnage target for the program is based on a "realistic potential."

Results of agronomic research work were reviewed by speakers at the second annual Southern Soil Fertility Conference held at Atlanta Nov. 1. The conference was sponsored by the Southern Soil Research Committee of the National Plant Food Institute.

Howard L. Sanders was named president of Northwest Nitro-Chemicals, Ltd., Medicine Hat, Alberta. Mr. Sanders was vice president and treasurer of Commercial Solvents Corp., New York, which operates the Canadian firm.

A two-day session which included talks on many angles of safety in the fertilizer manufacturing field was held by the fertilizer section of the National Safety Council at Chicago Oct. 21-22. George F. Dietz, safety director, Fertilizer Manufacturing Cooperative, Inc., Baltimore, was elected chairman of the section.

Three appointments by the National Plant Food Institute made in connection with an expanded educational program to cover various regions of the country include Dr. R. L. Beacher, with headquarters at Fayetteville, Ark.; Dr. Samuel L. Tisdale, with offices at Atlanta; and Dr. Richard B. Bahme, with headquarters at San Francisco.

A limited quantity of the new chemical compound, designated ET-57, will be supplied by the Dow Chemical Co., to certain cattle areas of four states to aid in controlling cattle grubs. The product is a systemic insecticide which is given to cattle internally. Some observers say it may save cattle growers millions of dollars annually in better meat and hides.

State control officials of fertilizers and pesticides met in Washington for their annual meetings. Paul T. Truitt, executive vice president of the National Plant Food Institute, made a plea for fertilizer consumption figures by materials and grades on a more uniform basis from all states. He suggested that such reports be made quarterly.

The pesticide control officials discussed tentative definitions for pesticides, defoliants and nematocides, as well as making a study of state laws in the light of the Miller amendment to the Food and Drug Act.

Stauffer Chemical Co. announced that its organic phosphate pesticide, Triton, will be in large-scale production before next crop season. A multi-million-pound a year Triton plant will be built near Henderson, Nevada, and it is expected to be in operation by February, 1958.

The National Plant Food Institute held a conference on chemical control problems at Washington, D.C. In charge of Dr. Vincent Sauchelli, NPFI scientist, the meeting heard discussions of modern methods of quality control in the manufacture of fertilizers.

A fertilizer conference held at Rutgers University, New Brunswick, N.J., heard discussions on the relationship between weather conditions and fertilizer use. The discussions indicated that if a plant is given a well balanced diet and a "full meal," it will be ready to grow fully when moisture conditions are correct.

J. T. Stevens and R. A. Lemler were named by the Nitrogen Division of Allied Chemical & Dye Corp. to sales positions.

A statistical article by Arnon L. Mehring, sponsored by the National Plant Food Institute, said that non-farm use of fertilizers amounted to about 10% of the total consumed in the U.S. At a conservative average price of \$75 a ton, he said, the non-farm market comes to some \$187.5 million a year, with some estimates going even higher.

The Western Agricultural Chemicals Assn. held its annual meeting at San Mateo, Cal., scheduling talks on weed control, nematodes, regulatory laws, and a program on what influences farmers to purchase and use pesticides. Ivor Burden, United Chemical Co., Richmond, Cal., was elected president of the group.

A report by USDA indicated that the soil bank is likely to exert a considerable influence on the kinds and numbers of insects in many parts of the country. Grasshoppers, particularly, will find in the reserved acreages, an increased amount of more favorable places for egg laying and a greater variety of desirable food plants. Other insects expected to increase in certain localities were listed as cutworms, wireworms, white grubs, Japanese beetles, European chafer, sod webworms, and corn flea beetles.

Alfred J. Dickinson, formerly vice president of Virginia-Carolina Chemical Corp., Richmond, Va., joined Freeport Sulphur Co. as vice president and sales manager, to succeed the late Roy B. Jones.

Wilson & Geo. Meyer & Co. broke ground for a new office building and warehouse in Los Angeles. The new structure, when completed, will also house the Wilson Meyer Co., and other offices.

PACIFIC NORTHWEST DEMONSTRATION FARM

(Continued from page 9)

was changed to NPK applied at the rate of 60 lb. each, plus manure. In 1956, Mr. Benedict changed the fertilizer program on this field to applications of 110 lb., 70 lb., and 140 lb. NPK, respectively. An interesting point is that soil samples taken in 1956, and even after five years of using what may be termed an adequate fertilizer program with manure, the soil test results still showed low levels of phosphorus and very low levels of potassium. Apparently the increased yields that were being obtained, needed an increased fertilizer program.

The results obtained on the Benedict farm due to following the recommendations of the technical committee were very dramatic. In three years:

Average number of milking cows increased from 14 to 25	some 25%
Total T.D.N. produced increased	some 35%
T.D.N. per crop acre increased	some 60%
Return from the increased use in fertilizer (lime pro-rated over 5 yr.) 1956 \$2.89	
1957 \$3.01	

An interesting feature concerning the dollar return from the use of fertilizer on the Oregon project for 1957 is that 10 acres were taken out of production and put into alfalfa which was fertilized and limed. The fertilizer costs were included in the 1957 figures while production from the alfalfa will not materialize until 1958. It is expected that the increase in forage production and return from proper fertilization on the Lennox Blatchford farm will be noted in 1958.

IDAHO PROJECT:

The Idaho demonstrational farm is located on the Blaine Marks place in Sandpoint, Idaho, and it comprises some 70 acres.

It, too, was rundown and the results have also been dramatic. The fertilizer program was based on soil test results and general crop recommendations in the area. Basically it was a nitrogen, phosphorus, sulfur, and boron program. Potash was shown to be needed on one field. As for results:

Milk production was increased 30%
Butterfat per acre was increased some 80%
Hay production was increased some 200%
Carrying capacity per acre was increased some 400%

For every dollar invested in fertilizer on the Blaine Marks farm, it returned approximately \$2.30 in forage production.

It should be noted that on the Idaho project, an outbreak of brucellosis occurred in 1956 and 1957 and set back Blaine Marks' plans for increasing the size of the herd. With the same number of cows now as in 1956 Blaine Marks has ample pasture and more hay than he needs to last the winter, this is in spite of taking 15 acres out of production for a green manure crop. The technical committee on the Idaho project did an excellent job, and if it weren't for this offsetting factor, the milk production would in all probability be more outstanding than on the Benedict farm.

OREGON PROJECT: The Oregon demonstrational farm is located in Hillsboro, Ore., on the Lennox Blatchford farm which comprises 60 acres. The project was started in 1956 and will be completed in 1958. The Oregon project differs somewhat from the other two projects in that it was not run down in the beginning, but represents more the average dairy farm and the problems of the average dairy farmer in the Willamette Valley. For this reason, the results from the project were less dramatic, but in a sense, more interesting.

To illustrate this last point, in 1955, the year before the project started, Mr. Blatchford was using \$650 in commercial fertilizers and the number of cow pasture days were about the same as that on the Washington demonstration farm two years after the start of the program.

Prior to the project, the fertilizer program was primarily nitrogen and sulfur while since the start of the project the program is again based

on soil test results and general recommendations for a crop.

An interesting feature concerning the fertilizer requirements on the farm is that it presents a classic example of the value of soil tests. Every one of the four fields differed in the requirements for either potash, phosphorus, or lime.

As an illustration, the potash requirements varied from no potash required on one field, to 120 lb. K₂O per acre on another, and 60 lb. K₂O per acre on the other two. As mentioned, it was a nitrogen, phosphorus, potash, sulfur, boron and lime program. As for returns for the two years of the project:

Pasture cow days have increased	some 25%
Total T.D.N. produced increased	some 35%
T.D.N. per crop acre increased	some 60%
Return from the increased use in fertilizer (lime pro-rated over 5 yr.) 1956 \$2.89	
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An interesting feature concerning the dollar return from the use of fertilizer on the Oregon project for 1957 is that 10 acres were taken out of production and put into alfalfa which was fertilized and limed. The fertilizer costs were included in the 1957 figures while production from the alfalfa will not materialize until 1958. It is expected that the increase in forage production and return from proper fertilization on the Lennox Blatchford farm will be noted in 1958.

At the completion of the Oregon project we hope to publish an attractive booklet, covering the results of these three projects for widespread distribution through the members of the Pacific Northwest Plant Food Assn. and other channels.

An interesting aspect to these projects is the basic principles and approach used on these farms. That is, soil tests and other college recommendations can be applied to almost every farm in the Pacific Northwest to the advantage of the farmer, and also to advantage of the fertilizer industry. We have in these projects been trying to promote this basic approach through the benefits that may be gained through using soil tests and college recommendations.

As can readily be seen, this has resulted in a favorable dollar return to the farmer.

Chemical Weed Control Boon to Citrus Growers

RIVERSIDE, CAL.—Modern weed control methods will save California citrus growers millions of dollars in the next few years, predicts a University of California scientist.

Monuron alone has saved \$500,000 in production costs over the first two years of its use, according to Boyce E. Day, assistant plant physiologist at Riverside. In the future it should save growers many millions of dollars.

Large-scale savings are also in prospect for the 10,000 acres of California orchards that he estimates are infested by bermuda grass.

"Most of this land ultimately must be reclaimed for water conservation if for no other reason," says the Riverside weed-control expert.

"At present this would be a \$12 million project. Methods now under development promise to cut this cost in half."

Mr. Day has obtained good experimental results in controlling bermuda grass with Dalapon, but dosages that won't injure trees have not yet been established.

OVER THE COUNTER

(Continued from page 9)

organizations, farmer-dealer meetings, demonstration applications, test plot results, purchase of new equipment, and the like all make legitimate news items.

Dealers should keep their editors informed of their activities, and be ready to supply names, addresses, and all pertinent facts and figures. They might invite editors to visit their establishments. Perhaps an excellent feature story will result from such a visit.

Just word of mouth advertising is also very effective. Certainly, a dealer should cultivate the local vocational agricultural instructor. He and his class might be invited to observe application procedures, or check row results. Every student is a potential future customer, and his father as well. Other people a dealer should talk to are farm managers, soil conservation representatives, county agent, insurance agent, real estate agents, even his dentist, doctor, and barber. This last fellow sees a lot of farmers and probably needs a fresh topic of conversation.

If a dealer is enthusiastic about his products and services, he is bound to infect others with his own optimistic attitude. The dealer has to tell to sell.

Dealers should try to keep their establishments as neat and attractive as possible. Dingy, disordered cubbyholes, with everything covered with a half-inch of dust and dirt are not conducive to thriving business. Attention getting displays should be used wherever possible. Literature supplied by the manufacturer, and releases from state universities, U.S. Department of Agriculture, Middle-West Soil Improvement Committee should be utilized in supplementing sales talks. Such material can do little good gathering dust on a shelf.

How should dealers conduct their sales talks?

Each dealer and his employees should keep in mind the following points when talking fertilizer to potential customers:

1. Show an interest in everything that is of interest to the farmer, his family, crops, livestock, buildings, equipment, and so forth. He should, as far as possible, keep a mental picture of conditions peculiar to each farm in his sales area; its size, types of soil, previous crops, and yield results. Such information makes it possible for the dealer to talk to the farmer on a more personal intimate level.

2. Keep a supply of inexpensive gifts to give the farmer, his wife, or children, such as gum, balloons, pencils, and notebooks.

3. Always consider the farmer's frame of mind at the time. If he is mad, or down on the world in general, it is no time to attempt to sell him anything. However, a dealer shouldn't hesitate to ask for an order when he thinks the time is right.

4. Know everything possible about other products competing for the farmer's fertilizer dollar. No attempt should be made to slander competing products, but the dealer and his employees should be ready to use the merits of their own to effectively counter arguments in favor of the other.

Better quality ingredients, higher plant food ratios, superior handling ability, speed and ease of application, amount of trace elements present, proven ability to achieve bumper yields, all such facts provide "meat" for effective counter arguments and comparative values. Sometimes, a potential customer can be referred to another farmer in the community who can be counted on to testify in

favor of the fertilizer desired to be sold.

Farmers may be encouraged to leave test rows or strips so they can see the effects of the fertilizer on their own crops.

With the growing complexity of agriculture, and the bewildering number of products offered for sale to farmers, many of them merely want simple, reliable advice as to what is best for use on their own farms.

Suppose a dealer can't afford to keep sufficient personnel and doesn't have time to do an effective job of selling?

Many times it is possible to use part-time salesmen. Retired farmers often make good salesmen and enjoy opportunities to visit with active farmers in the community. They know how to talk the farmer's language, and usually their opinions and recommendations are favorably received. Naturally, they will have to

be men who can talk effectively, and they must be thoroughly acquainted with the selling merits of the products.

Also community organizations often are seeking ways to raise money. It may be possible to work out a program whereby members take orders with commissions or salaries to be donated to the particular organization's treasury. Farmers in buying fertilizer from such salesmen will, in effect, be contributing to a worthy cause without any additional cost.

Should price be one of the main talking points in selling fertilizer?

The quality of the fertilizer and the quality of service offered should be stressed most. Price should be mentioned last, and the dealer should be prepared to minimize it with convincing arguments. For example, suppose a quality brand costs \$8 a ton more than a competing brand. On a 500 lb.-per-acre application, the increased price means only \$2 extra per acre—the price of one bushel of wheat, or two bushels of corn. Use of a quality fertilizer, particularly when correctly and uniformly applied, may mean far more than two additional bushels per acre. Many farmers lose

more than that merely by failing to adjust a picker or combine to work with maximum efficiency.

What is considered adequate service, and what should it include?

Effective service is doing everything possible to increase sales and profits, yet keeping within reasonable limits of expense. Service functions may include:

1. Soil testing.
2. Making arrangements for applications at times most convenient for both dealer and customer, and allotting times and locations for the most economical procedure.

3. Keeping adequate records of past purchases, yield, and profit for each farmer.

4. Initiating and maintaining good educational programs for farmers.

5. Ability to give farmers, particularly those who are least informed, sound advice on how to farm more profitably in a way that will appeal to their own logic.

6. Cooperation with local civic enterprises.

The skill and ingenuity with which each dealer conducts his buying, selling, and servicing will determine the success of each fertilizer dealer.

Books on Pesticides

WEEDS—Second Edition (1955)

W. C. Muenscher

Entire book has been revised and reset, with descriptions of seventy weeds added to the original list of five hundred, plus twelve new full-page plates depicting nineteen kinds. Keys and full descriptions provided for identification with detailed illustrations of 331. Types and sources of weeds, their means of reproduction and dissemination, and the amount of damage they inflict on crops. Specific directions for control, with reference to chemical methods of recent discovery \$10.00

CHEMICAL BUSINESS HANDBOOK

Dr. John H. Perry

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication \$17.00

INSECT PESTS OF FARM, GARDEN and ORCHARD Fifth Edition (1956)

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages \$8.50

DDT and NEWER PERSISTENT INSECTICIDES

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatibility of DDT with other insecticides, fungicides and additives are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations \$8.50

APPLIED ENTOMOLOGY—Fifth Edition

H. T. Fernald and Harold H. Shepard

This text since 1921 has had an outstanding record of usefulness. The Fifth Edition preserves the general organization and coverage, with changes to improve the presentation and to incorporate new knowledge. Contains chapters on anatomy, physiology and development. The economic importance and control of insects are discussed in a general way with much attention to insecticides. The classification of insects is emphasized, with examples drawn from species conspicuous for being very harmful or decidedly beneficial. Specific control measures included for injurious forms. Last chapter considers other pest animals closely related to insects. 385 pages \$7.00

DISEASES OF FIELD CROPS—Second Edition (1956)

James G. Dickson, Professor Plant Pathology, University of Wisconsin

Covers the diseases of cereals, grasses, legumes and fiber plants, which are the major food, feed and fiber sources throughout the world. More than 60 diseases incited by viruses, 40 by bacteria and 300 by fungi are listed and discussed in relation to field crop plants. Identification and information basic to its control, with emphasis on the problems of crop rotation, adaptation and the use of disease resistant varieties. This revised edition includes several new diseases, new illustrations and much recent research in the field \$8.50

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound \$7.50

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages \$8.00

WEED CONTROL

W. W. Robbins, A. S. Crafts, and R. N. Raynor

A textbook-manual presenting a modern view of the rapidly developing field of chemical weed control. Reports in detail the research on which most modern herbicide usage is based. Weeds, their reproduction, prevention, biological control, chemicals in weed control. Herbicides, foliage contact applications, hormone-like substances, root applications, evaluations of combinations of chemical applications. Weeds of grasslands and turf. Special weed problems, cropped and uncropped areas. Published 1952. 503 pages, 155 illustrations \$8.00

INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and ware-house personnel will find the book useful \$10.00

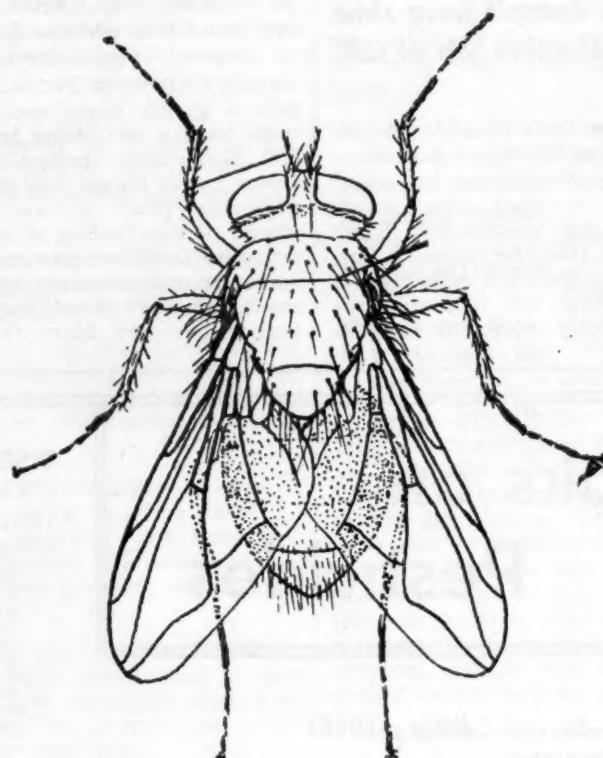
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BUG OF THE WEEK

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Blow Fly

How to Identify

Blow flies, often called green bottle flies and blue bottle flies, are of many kinds. The "green bottle" fly is almost twice the size of the common housefly, and is a bluish-green color. Reflections of light give it a bronze appearance. The black blow fly is dark greenish color all over and is larger.

Habits of Blow Flies

Life cycles of blow flies are similar to that of the house fly. They breed mainly in the carcasses of dead animals and in meat in garbage. Although they are seldom so numerous as houseflies, they carry many of the same disease-producing organisms. The larvae of blow flies also develop in wounds or natural openings of the body. Some species, true parasites, develop in the tissue of living animals. The flies spend the winter in the larval or pupal stage in soil or in manure. After appearance in the early spring, the pests continue breeding throughout the summer unless this activity is checked by dry weather. A generation is completed in about 3 weeks, from egg to egg.

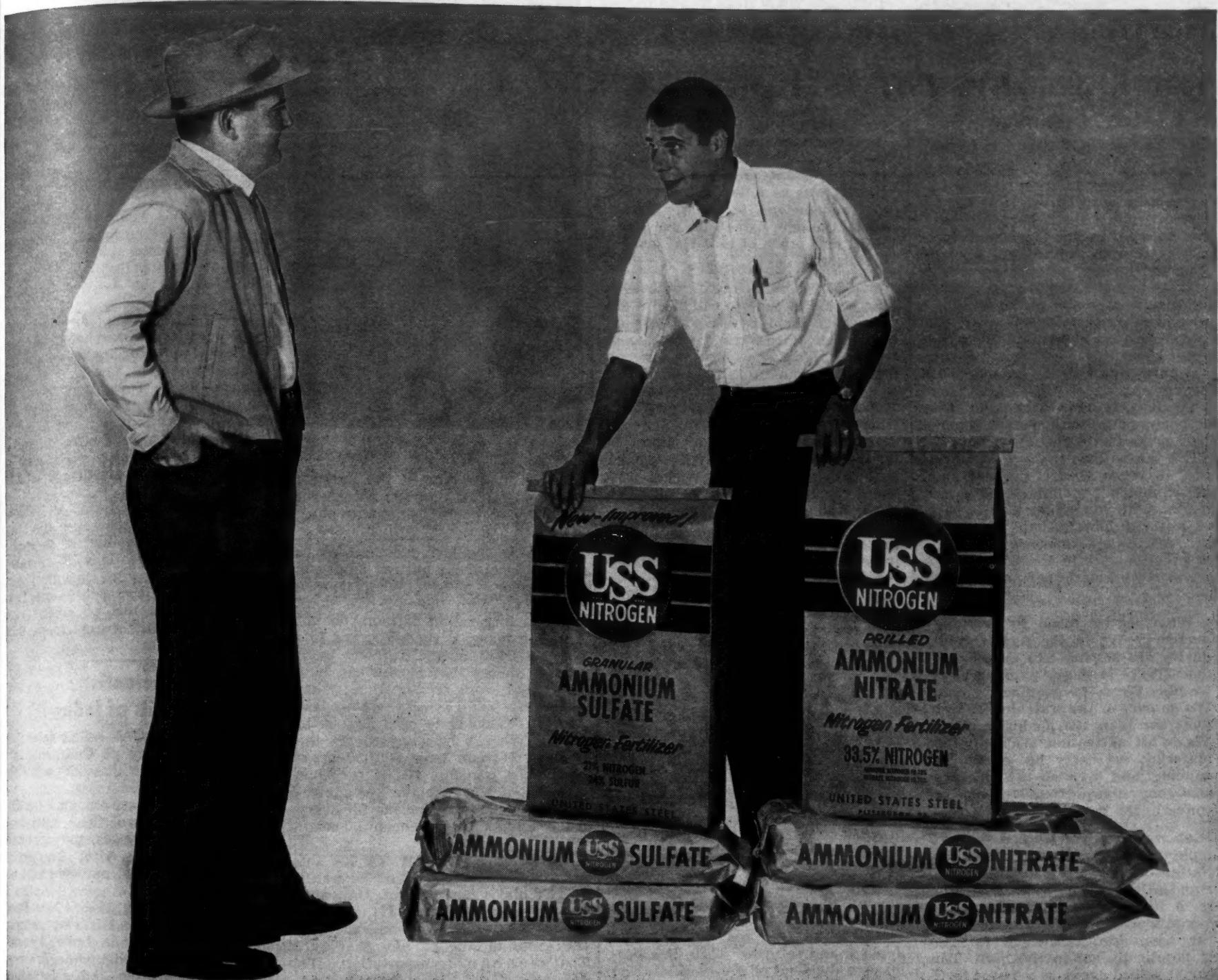
Damage Done by Blow Flies

These pests cause considerable losses to cattle, horses, hogs, sheep and goats. According

to USDA figures, blow flies cause an estimated annual loss to these animals of more than \$15 million. Chickens, too, can be affected by the fly, though indirectly. At times, fowl become ill and die from ingesting blow fly maggots that have developed in contaminated meat. The blow fly is also suspected of being a carrier of a number of human disease organisms.

Control of Blow Fly

An obvious means of control of these flies lies in sanitation, or removal of situations conducive to egg-laying and protection from cold weather. A number of insecticidal chemicals are effective in control. Recommendations for control materials, timing, application practices, dosages, etc., may vary widely in different states and sections of the country. It is therefore difficult here to attempt to give specific suggestions as to what materials should be used or how they should be applied. Local authorities such as county agents, state experiment station entomologists, and manufacturers of the various pesticides should be consulted for specific information. Labels on pesticide containers carry full instructions on use and dosages. Users should always be urged to study labels carefully before applying any insecticide on food or feed crops to avoid the risk of illegal residues at harvest time.



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USS NITROGEN FERTILIZERS



UNITED STATES STEEL

Partnership With Farmer Is Fertilizer Industry's Role

By R. L. LUCKHARDT*

Collier Carbon & Chemical Corp.
Los Angeles, California

The fertilizer industry is a working partner with agriculture. The industry is not a silent partner, nor is it a "secret" partner, particularly in view of its efforts being put forth to promote the use of fertilizer materials. It is estimated that the industry spends as much as \$2 million a year in such promotion efforts, and there is certainly nothing silent nor secret about the spending of this sum.

We are truly working partners with the agriculture of California. There is no industry with a greater sense of partnership with its customers, than exists in the fertilizer industry.

The farmer has many other partners, of course. He has the seedsman, the equipment manufacturers, processors, pesticide makers; all in partnership with him. Perhaps that's why there are fewer farmers nowadays... for every farmer in the field, there's one of us working in partnership with him.

What do we mean by working partners? We in the fertilizer industry are helping him get his job done. We're in there "pitching hay" for him. We do his reading for him. We do part of the watching of test plots for him. We do his hauling. We do his cultivation. We apply the material; we carry his credit, financing, and even on the pleasure side, buy him a frequent cup of coffee in the morning.

Let me give you a personal example of what I mean by a working relationship between a fertilizer dealer and a farmer. My folks are farmers. A few years ago, we bought an ammonia applicator. Then, in a few years when drought came, the applicator practically sat in the barn. This year, it rained again, so we used fertilizer on corn. It was interesting to observe whether or not dad would get out the ammonia applicator, repair the hoses, repair the gauges, get somebody broken in on driving the rig, go to town and pick up his supply, haul it out and use the applicator that he owns. Would he do the work himself? My bet was that he wouldn't... and that's exactly how it came out.

The applicator is still sitting in the barn and the nitrogen is in the ground. The applicator is still depreciating because he took on a working partner. He bought the services of a fertilizer dealer who hauled the material out in his own container, brought out a spray rig that was calibrated, all ready to go, nobody had to be shown how to use it—there was a working partnership between the dealer and the farmer. As a result, dad bought his goods and used his materials.

That is the reason why it is necessary to have this working partnership. It's necessary for you and me in the fertilizer business to be working partners. That's the way we get business. Any sales policy that takes us out of a working partnership and into just a supplier on a "come-and-get-it if you want it" situation, is doomed to failure. The thing that's going to keep you and me in business and give us a place in the sun serving the agriculture is the fact that we will equip and organize ourselves to be working partners: able to supply services for a decent fee, and stay in business.

Not only are we working partners in the daily operations of the farmer, but our products are the most profitable that he can buy. Let's stop and look some of the dol-

lar facts in the face. The agricultural commissioner reports for 1955 show the gross income per acre for two important crops in Imperial County was as follows: for vegetables and melons, \$1,115; for sugar beets, the figure was \$360 per acre. Now, how much of that was due to fertilizer?

I've asked many questions over a long period of time to establish a figure which could be used to indicate how much of that yield was due to fertilizer. Most of us have never seen a piece of ground that has been farmed continuously without fertilizer. There are very few experimental plots where they continually plant crop after crop after crop, and don't use fertilizer. Most of the fertilizer plots that you see are those which have had some kind of fertilizer program in the past.

However, at the experiment station of the USDA at Brawley in the Imperial Valley, they have harvested the fifth successive crop from plots that have never been fertilized. This spring it looked very much as though they would get no yield whatsoever from unfertilized grain.

I believe that if you had a piece of land in Imperial County which had not been fertilized, you would cut the yield of melons, vegetables, or sugar beets 75% if you didn't use fertilizer. So, if 75% of the gross income per acre is due to use of fertilizer, and if the gross income as shown by the Department of Agriculture is \$1,115 for vegetables and melons, we arrive at \$840 gross income an acre from those crops due to fertilizer. If 300 lb. of plant food was used (phosphate and nitrogen) on those vegetables and melons, they realized \$2.80 for every pound of plant food that was applied. If this plant food cost 11¢ a pound applied, and returned \$2.80, this produces a dividend of over 2,500%. The fertilizer sold in Imperial County last year to the growers of vegetables and melons brought a return of about \$25.00 for every dollar spent.

If, with sugar beets, 75% of the yield is due to fertilizer, you see a gross income of \$270 per acre due to fertilizer. If 300 lb. of plant food was used, they got 90¢ in gross income for every pound of plant food. If this 90¢ return cost 11¢ a pound for fertilizer applied, that means a gross return of over 800%. They got over \$8.00 back for every dollar spent. Let's get this gross income per pound of plant food down on a basis where it can be understood a little better. If, in the case of the lower income sugar beets, they got 90¢ gross income back for every pound of plant food used, and if an 80 lb. sack of ammonium nitrate contains 27 lb. nitrogen at 90¢ a pound gross income, then over \$24.00 gross income per sack of applied fertilizer was realized.

In other words, when you sold those farmers a 20-ton truckload of ammonium nitrate and they put it near their sugar beets, it produced a gross income of nearly \$12,000 per truckload. No one can call on the farmer, take his time, talk to him, and make him more money than you can. He can't use his time to make more money than he can make by buying your products. You are the best friend a farmer has.

From this, you can see that the farmer is the greatest up-grader of all. He takes our products and puts them near his crops. As a result of his investment, his work, and the wonders of nature, he gets an average of \$10.00 back for every dollar invested in fertilizer. With the low-pay crops this may go as low as \$4.00 for every dollar spent. For the high-pay crops, he gets at least \$25.00 back for every dollar spent. Under irriga-



Dr. R. L. Luckhardt

tion we should discard the national average of \$3.00 or \$4.00 return for every dollar spent. It's actually much higher.

Consider one last question. We've been talking about putting money in the farmer's pocket. What does a farmer do with money? We don't want to forget that farmers do not farm for money as such. You and I do not work for money. Farmers work for the things that money can buy. You and I work for the things that money can buy. His wife wants a new house. He's going to need \$25,000 to buy it. Where's he going to get the money? He can have \$25,000 gross income by spending \$2,500 for your product—if you take the average return of \$10.00 gross income for every dollar spent. That's cheap housing: \$2,500.

He wants a new car. Or his son graduates from school and he wants to give him a nice present. He wants to give him a \$4,000 car. If our friend spends \$400 with you, he can have the gross income to buy that car. That's cheap transportation. His daughter wants a new bathing suit. He can have a \$20.00 bathing suit by spending a \$2 bill with you. That's getting along with daughters mighty economically.

What this all goes to illustrate is that any farmer who buys a house, who buys a car, who buys a swimming suit, who buys anything, buys it mainly because of your help—because of the product you recommend to him. That's why every last one of us should be proud to be in the fertilizer business and working partners with agriculture.

Soil Research Project Under Way in South

CLEMSON, S.C.—A research project to measure the effectiveness of mixed fertilizers is under way here under the direction of Dr. W. B. Boykin, Clemson associate agronomist, and E. H. Stewart, USDA soil scientist.

The purpose of the study is to measure the rate and effectiveness of mixed fertilizers as influenced by their soluble phosphorus content, their particle size, and their placement in the soil, Dr. Boykin explained.

Arkansas Reports Sales of Fertilizer for September

LITTLE ROCK, ARK.—The Arkansas State Plant Board reports that 15,346 tons of fertilizer were sold in the state during September. Of this total, 6,553 tons were in materials and 8,793 were in mixed form.

According to the report, the grade of 10-20-10 was most popular, with 3,842 tons being sold. Next was 5-10-5, of which 2,206 tons were sold.

Among the single materials, ammonium nitrate was first with 2,297 tons being sold.

Plant Food Institute Allocates Funds for Studies in Kentucky

LEXINGTON, KY.—The National Plant Food Institute, Washington, D.C., has granted \$6,000 to the University of Kentucky agricultural experiment station for a chemical plant-food study project.

E. C. Doll, agronomist, under whose direction the work will be carried on, said the funds would be spent at the rate of \$2,000 for each of three years. Work will be done at special test locations at Campbellsville and Greenville. He will be assisted by A. L. Hatfield.

The research will be directed along three lines. The researchers will check on 1) best time for application of fertilizer on hay; 2) best time to apply nitrogen or best yields of hay, and maintenance of the most desirable grass-legume mixtures; and 3) effect of time and of rate of nitrogen and of potash on wheat; the wheat can be used either for grain or for supplementary pasture.

Mr. Doll said the grant will be most useful to Kentucky because the state is on "the midway line" of the areas where fall applications of chemical fertilizers on grains, legumes, etc., are profitable. He expects results from his first year's test on wheat next spring, and on the grass-legume mixtures by next fall.

California Scientist Studying Soils of India

BERKELEY, CAL.—Soil scientists at the University of California are doing a good turn these days for the agriculture of India.

But while they are studying the Old World soils, some of them cultivated for thousands of years, the scientists are also gaining vital knowledge about the future of our own soil resources.

It all started in 1955 when Prof. Hans Jenny of the Berkeley campus spent four months in India. His assignment, supported by the International Cooperation Administration, was to learn something about the causes of low fertility (especially a shortage of nitrogen and organic matter) in Indian soils.

In particular Mr. Jenny wanted to know whether low fertility was caused by the intensive cultivation and poor soil management, by the influences of a sub-tropical climate or by a combination of factors.

The Berkeley scientist criss-crossed India from Himalayas to Cape Comorin and from the western deserts to the Burman frontier, traveling thousands of miles by jeep and collecting hundreds of soil samples. Later, with the help of a Guggenheim Fellowship, he extended his travels and sample collecting to North Africa, Central Africa and parts of Europe.

All the soil samples were shipped to Berkeley, where they are undergoing careful chemical analysis. A recent grant from the Rockefeller Foundation will aid the completion of this analytical work and the preparation of the final scientific reports.

When the results of the tests are known, they may prove of great help to the Indian government in its efforts to improve agricultural production. And closer to home, they may provide valuable lessons on the long-term perils that threatened fertility of our own soils.

SULFUR PRODUCTION

WASHINGTON—The domestic sulfur industry produced 459,534 long tons of native sulfur and 45,311 tons of recovered sulfur (of a purity of 97% or greater) during July, according to reports to the Bureau of Mines. This compares with output in July, 1956 of 621,130 long tons of native sulfur and 43,400 tons of recovered sulfur. Producer stocks of native sulfur at the end of July totaled 4,153,206 long tons, a gain over 3,493,942 tons a year earlier.

* From recent talk before California Fertilizer group, Los Angeles.

Livestock Increase in Southeast Gives Corn Better Cash Status

WASHINGTON—A corn revolution is developing in the Southeast, according to the October issue of Agricultural Research, a publication of the U.S. Department of Agriculture.

Corn crops, once used almost entirely for farm animals and home consumption, are becoming cash crops as livestock increases in importance, the publication states. Last year the area grew 245 million bushels of corn, compared with 190 million in 1941.

This means a need for new varieties, different types of equipment and more effective disease, insect and rodent control. Storage facilities must be built and marketing places arranged. So say USDA specialists.

Southern corn breeders are stressing husk protection from insects as well as shorter, lodging-resistant stalks easier to harvest by machine.

Dixie 18, a hybrid with tightly wrapped husks, has already replaced many of the older Southern varieties. Tight husks offer some of the needed protection against the corn earworm, which attacks corn in the field, and against the rice weevil, which infests the field as well as later. But tightly wrapped shucks make husking with corn pickers, picker-shellers, or corn combine attachments difficult. This emphasizes the need to develop other ways to protect corn from insect infestations.

With the growing demand for corn as a feed, there is a trend to Corn Belt hybrids—which yield well and harvest easily but have loose husks that make them subject to insect damage. With power equipment, loose-husk varieties may be harvested and shelled quicker than those with tight husks. But many say advantages of loose husks are outweighed by disadvantages of corn earworm or rice-weevil infestations in the field.

Agricultural Research Service entomologists are studying the corn earworm and seeking ways to fight the sugarcane borer, corn stalk borer, soil insects and other field pests. A search for insecticides is under way in cooperation with Mississippi, Oklahoma and Georgia agricultural experiment stations.

Biological control of insects is also under way.

Entomologists are studying the rice weevil in stored corn. Infestations of this and other storage insects can be minimized if the corn is harvested as soon as it is mature—that is, when the moisture content of the kernels has dropped to about 30%. Then the corn must be dried mechanically or stored as silage for direct feeding.

Off-farm storage problems are under study by Agricultural Marketing Service engineers. Corn must be properly stored for protection against insects, moisture migration, high temperature and contaminating odors.

In addition to new storage facilities for corn, market arrangements have been planned with more attention paid to selling by grades.

Mechanization is moving into the South. Midwest farmers went from hand methods to corn pickers, then to picker-shellers. Southeastern farmers may go directly to picker-shellers—harvest shelled corn, dry it mechanically, store the crop in bins—rather than pick ear corn and allow it to dry under conditions inviting high insect and rodent losses, the publication states.

HORTICULTURISTS TO MEET
CORVALLIS, ORE.—The Oregon State Horticultural Society has scheduled its 72nd annual meeting, Dec. 5-6, at Oregon State College. Electrical gadgets to measure soil moisture, mechanical bean pickers, plastic mulches for vegetable crops, and a host of chemicals to kill weeds or boost fruit yields through hormone action are among new advances slated for discussion.

St. Regis Reports Income, Sales Drop

NEW YORK—Sales and net income of the St. Regis Paper Co. for the first nine months of 1957 were \$267,501,033, compared with net sales of \$276,495,259 in the same period of 1956. The sales for both periods include nine months' results of J. Neils Lumber Co. and St. Paul & Tacoma Lumber Co., which firms became subsidiaries in January and August of this year, respectively.

The company reported net income for the first nine months of this year, after provision for income taxes, at \$14,683,600, compared with \$19,725,557, in the comparable period of last year. The current earnings are equal to \$1.75 a share of common stock on 8,157,035 shares, compared with \$2.37 a share earned in the first nine months of 1956 on 8,151,574 shares.

St. Regis' earnings were adversely affected during the nine months by the continuing cost-price squeeze resulting from further increases in costs of materials, labor and freight. In addition, the company felt the effects of unfavorable demand and selling prices which have prevailed in the lumber industry.

The increases in costs have made it necessary for the company to raise prices on printing papers in the third

quarter and on kraft paper and multi-wall bags effective Oct. 1.

At a recent meeting of the board of directors Everett G. Griggs, II, was elected a member of the board.

Directors also declared a dividend of 35¢ a share on the common stock, payable on Dec. 1 to stockholders of record Nov. 1.

JOHN ELLERY SQUIRE DIES

YAKIMA, WASH.—One of Yakima's veteran farm supply store operators, John Ellery Squire, died recently at the age of 83. Mr. Squire, active in church and fraternal work here, retired five years ago after serving as manager of the Yakima Farmers Supply for more than 30 years.

AID TO FISHERMEN

LOS BANOS, CAL.—Helicopters have been called from Fresno to this west side California community to aid the hardpressed fisherman of the region. The helicopters are spraying mixtures of amino triazol and dowpon to kill growth of tule around a 3,000 acre refuge to open up additional fishing water. The control of the weed has long been a local problem, and the spray selected is expected to be effective within a matter of weeks without harming the fish.

Books on Fertilizers And Their Use

MANUAL ON FERTILIZER MANUFACTURE—Second Edition

Vincent Sauchelli

A complete, up-to-date revision of this well known book, that reviews in simple, everyday language the processes of manufacture of superphosphates, of ammoniation, and the formulation and preparation of mixed fertilizers. Indispensable to fertilizer plant supervisors and operators, and a valuable aid to research men and teachers. New chapters added: on plant nutrition, mixed fertilizers, ammoniation, granulation, revised and brought up-to-date. 80 tables \$4.50

SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following background course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. 430 pages, cloth bound \$7.75

PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliage and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages \$5.50

THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including \$3.00

PHOSPHATES IN AGRICULTURE

Dr. Vincent Sauchelli

A valuable book for the fertilizer salesman, agricultural teacher, farmer, fertilizer agent and county agent. Deals with rock phosphate versus superphosphate and colloidal phosphate, with the origin of phosphorus, the mining and processing of the phosphate rock, granulation of superphosphates, fixation of phosphorus in the soil, losses of phosphorus and replenishments, phosphorus in nutrition, radioactive phosphorus, basic slag, fused and sintered phosphates and TVA research data on phosphates from field tests in 13 states. 176 pages and well illustrated \$2.75

ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III—Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application \$4.50

HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color \$4.50

USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Assn. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trace-element plant foods. 208 pages, 106 illustrations, cloth bound \$3.00

COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)

Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages \$8.00

APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated \$2.40

MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data \$2.50

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NEW YORK—The board of directors of International Paper Co. has elected Lamar M. Fearing and William S. Snyder as vice presidents, it was announced by F. Henry Savage, vice president and general sales manager. Both have served as assistant general sales managers since 1954 and will continue in that capacity, Mr. Savage stated.

Mr. Fearing has been in charge of all sales of primary grades of paper and paperboard. Mr. Snyder has concentrated on sales and other aspects of the company's converted products, including shipping containers, multi-wall shipping sacks, and specialty bags.

Mr. Fearing, son of the late J. L. Fearing, who for many years was vice president of International, joined the company as an apprentice salesman in 1924. In 1954 he was appointed assistant general sales manager.

PERSONNEL CHANGE

KANSAS CITY—John Brown, vice president in charge of research and development for Spencer Chemical Co., has resigned to accept a position with Colgate-Palmolive Co., it was announced by Spencer officials last week.

CALIFORNIA MEETING

(Continued from page 1)

pluses are smaller—government-owned stocks have been reduced one-sixth in 16 months. Farm ownership is at an all-time high—as of Jan. 1, 1957, over \$176 billion.

"This is a great era of peacetime progress. There are more than 172 million citizens to feed and clothe and the population growth continues to surge upward—both here and abroad. There will be an ever-expanding demand for the products of American farms and ranches."

Dr. Russell Coleman, executive vice president of the National Plant Food Institute, Washington, D.C., spoke on "Agricultural Subsidy—A Partnership Affair." He said that technological advancements must continue to be applied quickly on the farm, to help balance our knotty agricultural problems. "The application of technology by farmers has resulted in outstanding savings to the farmers and to the American public."

Dr. Coleman said that if farmers had employed the same cultural practices in 1950 which were considered to be "advanced" in 1940, the housewife would have paid \$10 billion more every year for her food bill. Applied to 1957, this annual saving would probably be \$13 billion instead of \$10 billion. He said that this saving would pay more than twice the entire USDA annual appropriation. If modern technology and attending efficiency were not generally employed, American farms would require seven million more workers.

Dr. Coleman pointed out that the fertilizer industry has contributed materially to this increased farmer efficiency. He said that if there had been no increase in fertilizer technology and farmer use, even though all other agricultural progress had continued as it has, the American housewife would be paying two billion more dollars a year for food. Thus fertilizer's increased use since 1940 "almost pays the entire cost of our agricultural surplus problem."

He said that advances in fertilizer technology have reduced the farmer's cost of the plant food itself. On the other hand, if fertilizer prices had risen as much as have the prices of the other things he buys, his fertilizer bill today would be one and a quarter billion dollars more. Dr. Coleman pointed out that this annual savings, credited to the industry, "represents a major contribution to the national welfare, and shows that the fertilizer industry is in partnership with progress." He said that this advance in technology must continue, and pointed out that the present use of fertilizer (about 50% of the recommended amounts) accounts for at least 25% of the nation's food supply.

Our agricultural supply today is only about 4% in surplus, he said, which indicates that without present fertilizer use, there would be a 21% food shortage. Looking ahead to 1975, with its expected increase in population, he said that the fertilizer industry is obligated to sell more and more of its product, and that the American taxpayer must be told the whole story of agriculture and show that the agricultural subsidy is a partnership affair.

M. E. McCollam, chairman of the Association's soil improvement committee, told of the thirty years of existence of his committee, and of its unceasing crusade to improve soil technology and agricultural practices.

Sidney H. Bierly, general manager of the CFA, reported on the principal activities engaged in during the year, and welcomed the expanded program of the National Plant Food Institute on a regional basis.

Excellent outlines were followed by spirited discussion during the panel

review of the subject of the convention theme, which followed luncheon. Moderated by Dr. Daniel G. Aldrich, Jr., chairman of the department of soils and plant nutrition, University of California, Davis and Berkeley, the panel consisted of Dr. George B. Alcorn, director of agricultural extension, University of California, Berkeley; J. Earl Coke, vice president, Bank of America, San Francisco; John Martin, Jr., Martin Produce Co., Inc., Salinas; and Lowell W. Berry, president, The Best Fertilizers Co., Oakland.

The Austin Mosher Troubadors entertained the luncheon gatherings of delegates and their ladies.

President Hewitt announced that the exact time and location of the 35th convention, to be held in November, 1958, will be decided by the new board of directors at its first meeting in January.

ROUND TABLE

(Continued from page 1)

moniation of superphosphate were particle size, free acid content, water and porosity, with particle size probably being the most important.

T. P. Hignett, Tennessee Valley Authority, Wilson Dam, Ala., said that work at TVA indicated that superphosphate particle size had no effect on ammonia retention during granulation. He said that moisture content doesn't make much difference.

J. O. Hardesty, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Md., said that experimental data showed the following as conditions for best ammoniation:

Both triple super and normal superphosphate should have fine particle size.

Ammoniation rate should be not more than 6 lb. per unit for normal or not more than 4 lb. per unit for triple.

Initial moisture content should be not less than 3%.

Super should contain as small a proportion as possible of coarse (plus 20 mesh) particles.

Reaction time should be not less than three minutes.

Cooling of product at end of processing stage is necessary.

Mr. Hignett closed the discussion with the comment that TVA data showed that granular superphosphate, when porous, is fully suitable for ammoniation.

Robert T. Smith, Eastern States Farmers' Exchange, West Springfield, Mass., captured the attention of the group during a granulation session with his comments on the problem of how to granulate at optimum efficiency. He said he was answering the question from the point of view of an organization owned by farmers in the Northeast states, and then listed these points:

Use maximum amount of solution. Keep sulfuric acid usage within bounds.

Keep recycle at very minimum. Control oversize.

Watch moisture in the finished product. "We like to have it below 1% when the product goes into storage."

The farmer doesn't want fancy bags or a fancy product, Mr. Smith said. The farmer isn't going to show off or display the fertilizer, he declared. He buys it for one reason and that is to get an economical yield increase for his crops.

Also during the granulation session R. E. Sorenson, Cornland Plant Foods, Grinnell, Iowa, described his firm's manufacturing process which does not include artificial drying. He said that the company had gone over to a TVA continuous ammoniation, and that the secret of success in eliminat-

Ohio Pesticide Institute To Meet Nov. 20-21

WOOSTER, OHIO—The Ohio Pesticide Institute will hold its 11th annual school and conference at the Neil House here Nov. 20-21. The major part of the meeting will center around results of the past year's work in pesticide research at the Ohio Agricultural Experiment Station. About 30 men will appear on the program.

The conference is planned chiefly for dealers in pesticides, chemical manufacturers' representatives, county agricultural agents and lawn specialists. Among subjects to be discussed are late blight of tomato and potato, potato scab, soil fumigation, weed killers in potatoes and sweet corn, mites in flowers, tree borer control, scale insects, Japanese beetles, spittlebug survey, corn borer, cereal diseases, airplane dusting and diseases and insects of apples, peaches and grapes.

middle size for mixing with ammonium.

Manufacturers should have two potash bins and should use standard whenever possible and coarse only where it is needed to get good granulation, Mr. Tayloe said.

R. C. Smith, Eastern States Farmers' Exchange, West Springfield, Mass., said that "free flowing" were the two most important words talking about ideal physical characteristics of fertilizer. He said that the most important factor in an ideal size for granules and pellets is the farmers' preference. To the farmer he said, the important considerations are that the product be free flowing, non-caking, packaged to prevent hygroscopicity and that it doesn't stick to plant foliage. Mr. Smith suggested as to pellet size:

None, 0-6 mesh; 30% maximum weight of the product, 6-10 mesh; 50%, 10-20 mesh; 20%, 20-40 mesh; and 0 to 2%, finer than 40 mesh.

Two bag firm representatives, W. F. Jacobi, Union Bag-Camp Paper Corp., New York, and Robert J. McDonald, Bemis Bro. Bag Co., Minneapolis, talked about problems of weight control. They discussed means of minimizing the amount of product hanging in the air between cycles in dynamic weighing. This amount of product was referred to as the "tail on the stream that falls into the bucket after the beam comes in balance."

In a discussion of the use of diammonium phosphate in high analysis grades, Mr. Sorenson reported that his firm had used DAP three seasons in 13-39-0, 12-24-12, 10-30-10, 10-20-20 and 6-24-24. The products stood up well in storage, he said.

Mr. Hignett was one of several speakers who listed influences responsible for caking of fertilizers. He named these:

Moisture content, chemical composition, particle size and shape, amount and type of coating agent, climatic condition, amount of curing, type of bag, temperature when bagged and duration and condition of storage.

He said that of these factors moisture content and chemical composition are the most important and that these two are inter-related.

Mr. Hignett said that 10-10-10 and 12-12-12 usually are satisfactory if dried to 1% moisture and that moisture content of 14-14-14 should be 1/2%.

W. G. Mautner, Baugh Chemical Co., Baltimore, told the group that minimum material temperature for



LAST WAGON—Dr. John P. Roberts, president of the St. Louis Museum of Transport, stands beside the last horse-drawn truck used commercially in St. Louis. The truck, now retired, was operated by the Bemis Bro. Bag Co. and recently received a new canvas cover through courtesy of its old employer.

good granulation was 200° F. as the material leaves the ammoniator. He said that bag caking was caused primarily by high moisture or an excessive use of sulfuric acid. "The only way we keep out of trouble is to dry to 1½% and on our 1-1-1 grades to less than 1%," he said.

In discussing fertilizer particle size, G. F. Terman, Tennessee Valley Authority, Wilson Dam, Ala., said that there is no particular problem with nitrogen particle size and no great agronomic problems with soluble potassium materials.

Low soluble phosphate materials should be ground rather finely, while larger granules are more available in highly water soluble materials, Dr. Terman said.

He said that phosphate materials 40 to 50% water soluble should have larger granules, 6-20 mesh, and that materials below 25% water solubility should be granulated finely, about 35 mesh.

A great many other questions, on subjects ranging from raw materials of fertilizer manufacturing to meters and controls, were discussed during the 2½ day meeting. Dr. Sauchelli said that proceedings of the Round Table will be published later.



William T. Bess, Jr.

UNION BAG APPOINTMENT — Union Bag-Camp Paper Corp. has announced the appointment of William T. Bess, Jr., as assistant to the president. A member of the Union organization since 1950, Mr. Bess served most recently as assistant director of multiwall bag sales.

BETTER NOMENCLATURE

(Continued from page 8)

half dozen or so solution producers with only a dozen or so solutions. Recent figures show 22 producers supplying 38 ammoniating solutions. Also listed are some 15 additional nitrogen solutions containing no free ammonia and used primarily for direct application to the soil and to increase the nitrogen content of both liquid and dry fertilizers. In addition to these nitrogen solutions, anhydrous ammonia and varying strengths of aqua ammonia are available.

So far as nomenclature is concerned, companies of course use their trade names. This is good in that trade names establish the source of supply. Beyond this point confusion is rampant. The solutions are designated by numbers or letters or both. The lack of uniformity in both numbering and in analysis spells confusion. Some identical or near identical solutions may be referred to by as many as 10 different numbers or letters or combinations of numbers and letters.

Greatest confusion in nomenclature seems to exist in the ammonium nitrate-ammonia-water solutions. Perhaps this is because more companies are making these solutions and perhaps because these solutions are more universally used in the production of both conventional and granular fertilizers.

We at Sohio had hoped when we started production in 1955 that we could help bring about a standardization by numbering the four ammonium nitrate-ammonia solutions then being made as the majority of solution manufacturers were then doing, that is 1, 2, 3, and 4. These, too, could be readily translated to or from letters such as A, B, C, and D. The more recent rash of concentrated and new solutions has largely obscured the uniformity that then seemed to exist.

The area of greatest uniformity in numbering 2 years ago and yet today is in the four component, ammonium-nitrate-ammonia-urea-water solutions. These are all numbered in the teens—that is between 10 and 19.

With the ammonia-ammonium nitrate solutions being numbered under 10, we assigned the twenties to the ammonia-urea-water solutions. The solutions of two salts and water were numbered in the thirties since Solution 32 was the lone example of this type of solution when we started our numbering system.

Sohio certainly does not claim to have a perfect numbering system by

any means as we have already had occasion to question seriously certain aspects of it. I have only outlined our thinking and I am sure other companies have had equally adequate reasons for the systems they have used. We feel that standardization of nomenclature is important and most imperative and certainly would be glad to cooperate in any way possible to bring this about.

Standardization of analysis also would be most desirable. Analysis of similar solutions produced by different companies may vary by less than normal expected manufacturing tolerances. These variations in analysis between companies certainly are often too small to be detected in any fertilizer manufacturing operation. Standardization of analysis would cut down on the confusion for fertilizer manufacturers and even nitrogen solutions producers, and perhaps reduce the number of solutions. This too would require much study and cooperation between the manufacturers of both nitrogen solutions and mixed fertilizers.

I certainly hope that something might be done to standardize both nomenclature and analysis of nitrogen solutions. Perhaps this is a task which should be assigned to an industry committee working through the Round Table or some other organization. Where there is a need there is usually an answer to this need.

TVA APPOINTMENT

(Continued from page 1)

September, and both he and Dr. Welch will be subject to approval of the Senate when Congress convenes early in 1958.

The latest appointee became dean of Kentucky's college of agriculture in 1951 after having served a number of years as dean of the college of agriculture at Mississippi State College. He had received his A.B. degree at Mississippi and continued his post graduate studies at the University of Colorado and the University of Wisconsin where he earned his M.S. and Ph.D. degrees, respectively.

In addition to his post with TVA, Dr. Welch holds positions of responsibility on the boards of financial and agricultural institutions, and membership in numerous scientific organizations.

INSECT NOTES

(Continued from page 4)

which are blood-sucking insects, spend all or a part of their lives on animal hosts, and on dairy cattle will reduce milk production, on beef cattle will reduce weight increases.

"When poultry flocks and dairy and beef animals are in winter quarters, it is important that they be kept free of insects that make them miserable and lower their vitality," the association reminds. "Winter quarters should be thoroughly cleaned and kept clean and free of insects. Fortunately, we now have effective chemical controls, which when properly used, either as sprays or dusts, will control the winter insect pests."

Both sprays and dusts have proven effective in controlling lice and mites in poultry houses, and in the dairy and beef herds. The birds or animals can be left in the house or barn while it is being sprayed since the mist that will settle on the birds and animals will help control the parasites.

Pink Bollworms Found

In Arizona Survey

TUCSON, ARIZ.—The pink bollworm has made his appearance in Arizona. This cotton insect has been picked up in alarming numbers in Graham County in the Solomon and Safford areas, according to the USDA plant pest control branch and the Arizona agricultural and horticultural commission.

A number of worms were found at Duncan in Greenlee County, reported J. N. Roney, extension entomologist for the University of Arizona. The greatest concentration was on the New Mexico side of the line, however.

"The discovery of a heavy infestation of pink bollworms means that all farmers must cooperate to the fullest," the entomologists said. "Farmers can help in the control of bollworms by following some practices which we know will help, and every farmer must cooperate since the failure of one man can mean failure for the whole program."

MISSISSIPPI

(Continued from page 4)

are the three needed on most farms in the South and they should be applied according to the plants and the use needed for them during the growing season.

The farmer has come to the place where he can be just as accurate with his fertilizer usage as the manufacturer is in mixing fertilizer. High crop production in the South, according to Mr. Boyd, means the wise use of plant food. He says the plant foods must be in the ground or applied to the ground for the crops to use. Many of our low productions of the different crops are caused by the lack of plant food or low applications being applied.

The Mississippi fertilizer industry has meant a lot to increased production in Mississippi during the last 10 years because it has joined hands with agricultural workers and the farmer himself in raising production in Mississippi on all crops including pastures.

Approved grades of mixed goods for Mississippi in 1958 are 4-10-7, 4-8-16, 4-12-12, 5-10-5, 5-10-10, 6-8-8, 6-12-12, 6-24-24, 7-14-7, 8-8-4, 8-8-8, 8-16-16, 8-20-14, 8-32-16, 9-12-12, 10-5-10, 10-20-10, 10-20-20, 12-8-8, 12-12-12, 12-16-16, 12-24-12, 13-13-13, 14-14-14, 15-15-15, 15-30-15, 8-24-0, 11-48-0, 16-20-0, 20-0-10, 0-6-40, 0-10-20, 0-10-30, 0-14-14, 0-16-8, 0-20-20 and 0-25-25.

NURSERYMAN ELECTED

SANTA BARBARA, CAL.—Willis E. Stribling of Merced, Cal., was elected president of the California Association of Nurserymen at the 47th annual convention of the association held in Santa Barbara recently.

Angoumois Moth

Found in Illinois

URBANA, ILL.—The destructive Angoumois grain moth has been found in southern Illinois cornfields this fall. Steve Moore, entomologist with the University of Illinois College of Agriculture and the State Natural History Survey, reports that in some cornfields moths were found in 80% of the ears.

Each infested ear had from one to 50 moth larvae in it. The worm stage of the moth feeds on the heart of the kernel and eats about 10% of the kernel's total weight. When full grown, the larva inside the kernel eats an exit tunnel and emerges as an adult moth. A thin transparent film is left on the seed coat covering this hole.

Parasitic Wasps Pass New Mexico Tests

STATE COLLEGE, N.M.—Parasitic wasps have passed their initial survival test in New Mexico and will now be used in an increasing number of experiments to see if they can control the spotted alfalfa aphid that has caused millions of dollars worth of crop losses in New Mexico in recent years.

Stuart R. Race, assistant professor of botany and entomology at New Mexico A&M College, says that the wasps were imported by the U.S. Department of Agriculture from the Middle East where they attack aphids feeding on alfalfa. Three types—Aphenlinus, Trioxys and Praons—were released in four alfalfa fields in Dona Ana County to see if they would survive the New Mexico climate. Recent collections show that one type—the Praons—will live and multiply. Researchers will use these parasites in many New Mexico tests from now on.

Good Returns Noted from Fertilizers and Organics

MIDLAND, TEXAS—“Crop yields are almost unlimited when the grower uses both raw organic matter and fertilizers combined,” according to J. H. Yater, cotton and grain sorghum farmer. Mr. Yater is producing three bale of cotton an acre, as compared to a bale and three-quarter average for the area. His maize yielded 4,500 lb. while neighbors were getting almost a ton less per acre.

These results are achieved by applying a thick layer of cotton burrs during the winter months, then putting on nitrogen and phosphorus in liberal quantities, he reports.

“When we deplete the humus by one-crop farming, the soil becomes single-grained,” he said. “The nutrients get out of balance, and even fertilizer will not boost yields more than 20%. But when we build up the organic matter, an application of fertilizer will almost double production.”

Mr. Yater used 400 lb. 16-20-0 this last season to get his high yields. Next year he plans to put on liquid nitrogen to speed up decomposition of the burrs.

GRASSHOPPERS

(Continued from page 1)

over about 29,000 acres near Arch in Roosevelt County. Ranchers in the treated areas can expect to be rid of grasshoppers for five years or more, Mr. Durkin says.

However, New Mexico will still have over 470,000 acres of rangeland and about 60,000 acres of cropland infested with grasshoppers in 1958, according to Mr. Durkin. Colfax, Union and Harding counties—perennial hot spots for grasshoppers—will have some of the heaviest and largest rangeland infestations. Other counties such as Quay, Curry, Roosevelt, Lea, Mora, Taos, Chaves, Lincoln and Grant may expect grasshopper infestations in range areas next summer.

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A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

GOLDEN ANNIVERSARY . . .

Agronomy Society Observes its 50th Year

Congratulations are being extended to the American Society of Agronomy upon the 50th anniversary of its founding. As the ASA meets this week in Atlanta, more than usual attention is being focused upon the organization and its accomplishments at the present time and also in retrospect as past years are reviewed.

To say that agronomy is a "basic" science is doing so in a double sense, referring of course to its contributions to agriculture as well as to its earthy and practical connotations. The scientists engaging in agronomic pursuits have indeed contributed to the development of the fertilizer industry and their work in studying the beneficial effects of applying plant food in greater amounts continues to pay off.

Not everyone knows nor appreciates the full story of what the agronomists do and their work in past years. During the past half century, these scientists have played important roles in American agriculture's productive capacity. Among such advances are the development of hybrid corn, rust-resistant wheat, and hybrid dwarf (grain) sorghum; soil testing for nutrient deficiencies; chemical fertilizer technology and production; chemical control of insects, weeds, and diseases; soil conservation technology; and new improved forage grasses and legumes.

Although the study of soil productivity and of plants has been going on for centuries, it has been only in the past fifty years or so that this searching has become a well-integrated science. In fact, the American Society of Agronomy dates back just that far.

At the close of 1907, a meeting was held in the botany department of the University of Chicago, and out of that gathering the ASA was born. The date was December 30, and the day was cold; but from that comparative handful of charter members, the Society has now grown to 3,300 members whose varied activities exert a strong influence on the American standard of living and on the nation's ability to sustain that standard in the years of the future.

At one time, the principal function of the Society was the exchange of current information within its own membership, but today its activities cover a much broader scope. It fosters high standards of education in farm crops and soils; it encourages professional improvement among its members; it supports high standards of ethics among its members; and it promotes actively the use of research results in crops and soils on the farms of America.

That the group appreciates the value of disseminating information to its members and others who can benefit from its work, the Society publishes an average of 150 technical papers annually in its own Journal, and publishes a popular magazine which attempts to shorten the span of time between discovery and actual farm acceptance of new practices. One of its sister societies, the Soil Science Society of America, publishes another technical journal.

The Society's membership is divided among 13 divisions and 3 subdivisions as follows: soil physics, soil chemistry, soil microbiology, soil fertility, plant nutrients, organic soils, soil classification, forest soils, soil conservation, crop breeding and genetics, crop physiology and ecology, crop production and management, seed production and technology, turfgrass management, weed control, and agronomic education. The divisions devoted to

crop science were recently organized into a second sister society, the Crop Science Society of America.

Four regional branches and several state chapters also are active, each scheduling its own annual meetings where research papers of regional significance are presented.

Agronomic research underlies America's tremendous food production in World War II which helped feed much of the free world. "The continued status of a food-surplus nation brings some acute marketing problems, but it provides the nation with a hedge against prolonged drought, a store-house of technology to draw on in a national emergency, and the capacity to feed scores of millions more in its population a generation ahead," the Society observes.

Farmers Who Heed Good Advice Come Out Ahead

The story behind the selection of West Virginia's champion conservation farmers for 1957 holds significance and perhaps encouragement for those engaged in providing information to people on the farm. While farmers have been cited for outstanding performances over a long period of time, the naming of Mr. and Mrs. R. J. Roberts of Mercer County, W.Va. has some unusual aspects.

In the first place, Mr. Roberts is not a young man. He worked in Naval Research Programs until his retirement a few years ago, and then took up farming on a 340-acre dairy farm that has been in his wife's family for several generations. How then did he achieve eminence so quickly?

When asked this question, he points out that he joined the farming profession with a completely open mind, and did not have to "unlearn" a lot of bad farming habits. "I learned early that it pays to listen and to follow instructions as long as they are sound and reasonable." He added that he got just this kind of advice from the soil conservation service, and heeded it.

Ten years ago, the Roberts milked 28 cows, but the farm could not produce enough feed, so they had to buy hay and rent pasture. Today, 18 Holstein and two Guernsey cows are producing twice as much milk as did the 28 previously. And the farm now produces all the hay and pasture needed, even in dry years such as 1957 was.

Mr. Roberts, in listening to the advice of local authorities, used adequate fertilizer on his cropland. All were treated with 500 lb. 20% superphosphate, 0-14-14, or 0-20-20 fertilizer an acre every other year, he explains. Some of the fields, however, receive this treatment every year.

One of the encouraging prospects for the industry in years ahead lies in the fact that more and more farmers are willing to "listen" to the good advice being given regularly by state and federal extension services, county agents, conservation authorities and industry agronomists and entomologists whose collective influence is great.

The publicity gained by Mr. and Mrs. Roberts, carrying the idea that they have succeeded because of heeding the advice of people who know, should have a good effect on some of their fellow farmers who may have been reluctant to act on suggestions given them.



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MEETING MEMOS

1958

Feb. 10-11—Southwestern Branch, Entomological Society of America, annual meeting, Shamrock Hilton Hotel, Houston, Texas.

EDITOR'S NOTE — The listings above are appearing in this column for the first time this week.

Nov. 20—Annual Rutgers Pesticide Conference, University Commons, New Brunswick, N.J.

Nov. 20-21—Ohio Pesticide Institute, Annual Winter Meeting, Neil House, Columbus, Ohio, J. D. Wilson, Ohio Agricultural Experiment Station, Wooster, Ohio, Secretary.

Nov. 21—New Jersey Entomological Society, Fall Meeting, New Brunswick, N.J.

Nov. 21-22—Seventh Annual Arkansas Fertilizer School, Marion Hotel, Little Rock, Ark.

Nov. 25—Oklahoma Fertilizer Dealers Conference, Oklahoma State University, Stillwater, Okla.

Nov. 25-26—Entomological Society of America, Eastern Branch Meeting, Commodore Hotel, New York, B. F. Driggers, New Jersey Agricultural Experiment Station, New Brunswick, N.J., Branch Secretary.

Nov. 26—Oklahoma Soils and Crops Conference, Oklahoma State University, Stillwater, Okla.

Nov. 26—Manufacturing Chemists Assn., 7th Semi-Annual Meeting and Winter Conference, Hotel Statler, New York.

Dec. 1-3—Southern Seedsmen's Assn., Jung Hotel, New Orleans.

Dec. 2-3—Plant Food Producers of Eastern Canada, Seaway Hotel, Toronto, Canada.

Dec. 2-5—Entomological Society of America, 5th Annual Meeting, Hotel Peabody, Memphis, Tenn., R. H. Nelson, 1530 P St., N.W., Washington 5, D.C., Executive Secretary.

Dec. 2-5—Cotton States Branch, Entomological Society of America, 32nd Annual Meeting, Hotel Peabody, Memphis, Tenn., M. E. Merkl, Box 202, Leland, Miss., Secretary-Treasurer.

Dec. 2-6—Exposition of Chemical Industries, New York Coliseum.

Dec. 3-4—Iowa State College Fertilizer Manufacturer's Conference and Fertilizer Dealer's Short Course, Memorial Union, Iowa State College campus, Ames, Ia.

Dec. 4-5—Twelfth Annual Hybrid Corn Industry-Research Conference, La Salle Hotel, Chicago, Ill.

Dec. 4-6—Soil Science Society of Florida, Annual Meeting, Fertilizer Symposium on Dec. 5, University of Florida, Gainesville.

Dec. 5—Second Annual New Mexico Irrigation Exposition, Eastern New Mexico Fairgrounds, Roswell, N.M.; Al W. Woodburn and William Harr, c/o Southwest Public Service Co., Roswell, co-chairmen.

Dec. 6—Eighth Annual Fertilizer Dealers Short Course, South Dakota State College, Brookings, S.D.

Dec. 8-12—Vegetable Growers Association of America convention, Jung Hotel, New Orleans, La.

Dec. 9—Soils and Fertilizer Short Course, St. Paul Campus, University of Minnesota.

Dec. 9-12—Chemical Specialties Manufacturers Assn., Hollywood Beach Hotel, Hollywood, Fla.

Dec. 10-12—North Central Weed Control Conference, 14th Annual Meeting, Hotel Savory, Des Moines, Iowa, Lyle A. Derscheid, agronomy department, South Dakota State

College, Brookings, Program Chairman.

Dec. 11-13—Agricultural Ammonia Institute, Seventh Annual Meeting, Hotel Marion, Little Rock, Ark., Jack F. Criswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 12-13—Beltwide Cotton Production Conference, Hotel Peabody, Memphis, Tenn.

Dec. 18-19—Shell Nematology Workshop, Drayton Hall, University of South Carolina, Columbia, S.C.

Dec. 19-20—Missouri Soil Fertility Short Course, University of Missouri, Columbia, Mo.

1958

Jan. 7-8—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 8-10—Northeastern Weed Control Conference, Hotel New Yorker, New York, R. J. Aldrich, Rutgers University, New Brunswick, N.J., Secretary.

Jan. 9-10—Mississippi Insect Control Conference, State College, Miss.

Jan. 13-14—National Cotton Council of America, twentieth annual meeting, Westward Ho Hotel, Phoenix, Ariz.

Jan. 13-15, 1958—Weed Society of America and Southern Weed Conference, Joint meeting, Peabody Hotel, Memphis, Tenn.

Jan. 14-15—Georgia Plant Food Educational Society, Annual Meeting, University of Georgia, Athens, Ga., Fielding Reed, 710 Mortgage Guarantee Bldg., Atlanta, Ga., Secretary-Treasurer.

Jan. 14-16—Nebraska Fertilizer, Machinery and Chemical Exposition, Sponsored by the Nebraska Fertilizer Institute with the Nebraska College of Agriculture, Pershing Auditorium, Lincoln, Neb.

Jan. 20-21—Pest-O-Rama, sponsored by the Alabama Association for Control of Economic Pests, Coliseum, Montgomery, Ala., W. G. Eden, P.O. Box 626, Montgomery, Ala., Secretary-Treasurer.

Jan. 21-22—North Carolina Pesticide School, College Union Bldg., North Carolina State College, Raleigh.

Jan. 21-23—California Weed Conference, San Jose, Cal.

Jan. 22—Oregon Fertilizer Dealers Day, Oregon State College, Corvallis, Ore.

Jan. 22-23—Northwest Agricultural Chemicals Industry conference, Hotel Benson, Portland, Ore. (In connection with N.W. Vegetable Insect Conference and Western Cooperative Spray Project.)

Jan. 23-24—Illinois Custom Spray Operators School, University of Illinois, Urbana, Ill.

Jan. 30-31—Colorado Agricultural Chemicals Assn., Annual Meeting, Cosmopolitan Hotel, Denver.

Feb. 4-6—North Carolina Pest Control Operators' Short Course, College Union, Raleigh, N.C. Clyde F. Smith, Dept. of Entomology, N.C. State College, secretary.

Feb. 13-14—Agronomists-Industry Joint Meeting, Edgewater Beach Hotel, Chicago, sponsored by the Middle West Soil Improvement Committee, Z. H. Beers, 228 N. LaSalle St., Chicago 1, Ill., Executive Secretary.

Feb. 20-22—Nitrogen Conference, University of Minnesota, St. Paul. M. W. Mawhinney, Smith-Douglas Co., Albert Lea, Minn., Chairman.

March 4-5—Western Cotton Production Conference, Hotel Cortez, El Paso, Texas, Conference Sponsored by the National Cotton Council

and the Five State Cotton Growers Assn.

June 9-11—Association of Southern Feed & Fertilizer Control Officials, Heart of Atlanta Motel, Atlanta, Ga., Bruce Poundstone, University of Kentucky, Lexington, Ky., Secretary-Treasurer.

June 15-18—National Plant Food Institute, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 25-27—Pacific Branch, Entomological Society of America, San Diego, Cal.

July 18-19—Southwest Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

Fertilizer-Irrigation Studies to Be Conducted

DAVIS, CAL.—A research assistantship for fertilizer-irrigation studies has been established at the University of California's Davis campus by the National Plant Food Institute, Washington, D.C.

Three annual grants of \$3,000 each will support a study of the basic principles involved in the interrelationships of soil, moisture, and fertilizer. The aim is to determine how irrigation amounts and frequencies affect fertilizer requirements, how different fertilizer treatments affect irrigation requirements, and how soil-moisture levels affect the availability of nutrients to plants.

The studies will be cooperatively supervised by Daniel G. Aldrich, Jr., chairman of the department of soils and plant nutrition, and Robert M. Hagan, chairman of the department of irrigation. Benjamin Zur, a graduate student from Israel, has been appointed research assistant.

The National Plant Food Institute has announced an expanded program to stimulate research through increased grants to universities and colleges. The Institute maintains that agriculture in general uses only about half the fertilizer it should for its own best interests.

The University, besides making progress reports to the Institute, will make its research results generally available through articles in technical journals, university publications, and press releases.

INSECT WARNING

FARGO, N.D.—Wayne J. Colberg, extension entomologist at North Dakota Agricultural College, has warned farmers that the high-moisture content of much grain going into storage may mean insect trouble.

CROPLIFE, Nov. 18, 1957—23

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.
Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Advertisements of new machinery, products and services accepted for insertion at minimum rate of \$10 per column inch.
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SALESMAN FOR NITROGEN PRODUCER. Excellent opportunity. Agronomy degree or equal. Age 25 to 40. Location Iowa, Missouri. Three to five years' experience selling to fertilizer manufacturers. Salary based on experience. Address Ad No. 3244, Croplife, Minneapolis 1, Minn.

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SALES OR MANAGEMENT POSITION IN Pacific Northwest with fertilizer manufacturer or allied industry. Have farm background and degree in agriculture. Eight years' experience as fertilizer sales representative and management of anhydrous ammonia and bulk fertilizer distribution. Address Ad No. 3218, Croplife, Minneapolis 1, Minn.

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LIQUID FERTILIZER AND LIQUID FEED business. N.E. Iowa. Efficient, simple, liquid mix plant, 1½ years old, built by top engineers. Capacity 250 tons a day. \$180,000 sales '57. Present manager may stay. Complete applicating, delivery equipment. This is an operating business but offered at way under book or replacement value. Terms to right party. Quick action will get right man an established business on exceptional terms. Address Ad No. 3240, Croplife, Minneapolis 1, Minn.

Reseeding Land by Plane in Oregon

BAKER, ORE.—A second major reseeding of range burn in Eastern Oregon is under way in Baker County with Lewis D. Morris, manager of the Coffee ranch, five miles east of Haines, starting work on several thousand acres of sagebrush land.

He has seeded some 2000 acres to Nomad alfalfa and crested wheatgrass with excellent results. Another 2000 acres has been disced and is ready to seed in the spring.

Mr. Morris plans to seed by airplane and his "airlift" will put 1,000 acres of bulbous bluegrass at the rate of 10 lb. an acre. The seeding will be done on range land that is inaccessible for drills or is too rocky for working with discs.

INDEX OF ADVERTISERS

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Allied Chemical & Dye Corp., Nitrogen Division	3
American Potash & Chemical Corp.	
Ashcraft-Wilkinson Co.	
Anco Manufacturing & Supply Co.	
Baughman Manufacturing Co., Inc.	
Bernis Bro. Bag Co.	
Blue, John, Co.	
Bonneville, Ltd.	
Bradley & Baker	
Broyhill Company	
Chase Bag Co.	7
Collier Carbon & Chemical Corp.	13
Commercial Solvents Corp.	
Dallas Tank Mfg. Co.	
Davison Chemical Co.	
Dow Chemical Co.	
E. I. du Pont de Nemours & Co., Inc.	
Duval Sulphur & Potash Co.	
Flexo Products, Inc.	
Gates Rubber Co.	
Grace Chemical Co.	
Harshaw Chemical Co.	
Henderson Mfg. Co.	
Hercules Powder Co.	
Hough, Frank H., Co.	
International Minerals & Chemical Corp.	
Johns-Manville Corp.	
Kent, Percy, Bag Co.	
Kraft Bag Corp.	
Merck & Co.	
Meredith Publishing Co.	
Meyer, Wilson & Geo., & Co.	
Miller Publishing Co., The	15, 19
Mississippi River Chemical Co.	
Monsanto Chemical Co.	
National Distillers & Chemical Corp.	5
National Potash Co.	
Naugatuck Chemical Div., U. S. Rubber Co.	
Nitrogen Div., Allied Chemical & Dye Corporation	
Northwest Nitro-Chemicals, Ltd.	
Olin Mathieson Chemical Corp.	
Pacific Coast Borax Co.	
Penick, S. B., & Co.	
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Phillips Chemical Co.	
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Spencer Chemical Co.	
Spraying Systems Co.	
Stewart-Warner Corp.	
Successful Farming	
Tennessee Corp.	
Union Bag-Camp Paper Corp.	
U. S. Industrial Chemicals, Inc.	
U. S. Phosphoric Products Division	
U. S. Potash Co.	
U. S. Rubber Co., Naugatuck Chem. Div.	
U. S. Steel Corp.	17
Velsicol Chemical Corp.	

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- Fertilizer manufacturers, mixers and suppliers of fertilizer ingredients
- Formulators of Pesticides, Herbicides and other Farm Chemicals
- Retail Dealers selling fertilizer, farm chemicals and other farm supplies; Custom Sprayers, Pest Control Operators, and Nurserymen
- Farm Advisor Group—county agents, agriculture department officials, extension and experiment station personnel, soil conservation men, bankers and consultants

Croplife, with a publishing schedule every 168 hours, is reporting news to the industry while it's still news! A staff of 21 crack newsmen in key U.S. cities and backed by 100 special correspondents provides the stop-press coverage of the industry required by readers who make the command decisions.

Croplife's unique distribution plan permits advertising (1) on the national level to the manufacturing core of the industry, and (2) on the regional basis to the marketing segment of the market. Ask a Croplife representative to elaborate on this in terms of your product!

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